

*September . 1954*

**8TH ANNUAL  
SPECIAL SECTION**

HOME LAUNDRY EQUIPMENT INDUSTRY

# Finish

THE MAGAZINE OF  
*Appliance* AND  
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT



## How Fosbond helps make Caloric Dryer a beautiful buy

The new Caloric Gas Clothes Dryer has to have an unusually durable finish both inside and out—one that will stay like-new for years, in spite of extreme and regular exposure to moisture and heat.

To help Caloric meet these high requirements, Pennsalt specialists made a comprehensive plant survey. Working closely with Caloric production men, they devised a Fosbond cycle for use on dryer parts prior to final finishing with Glidden's Nu-Pon. Fosbond 10, a zinc phosphate solution for spray application, was selected as the phosphatizing agent.

HL-2

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Pennsylvania Salt Manufacturing Co.

SEPTEMBER • 1954 finish



# Home Laundry Equipment Industry Special Section

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## Still Dynamic . . . Still Moving Forward

Last year we opened our brief editorial on this page with the heading, "A Dynamic Industry Moves Forward." In dedicating this Special Section, the eighth in our annual series, to the Home Laundry Equipment Manufacturing Industry, it is a pleasure to report that the industry is "Still Dynamic — Still Moving Forward."

Thirty-two manufacturers of washers, ironers and dryers built a total of 4,411,366 units during 1953, thus surpassing the prediction made in this column last year — that of a four million unit year.

While manufacturers in some fields are "moaning and groaning," the builders of home laundry equipment have their respective noses to the grindstone and their production and sales plans geared for new production and sales records. It is expected that the industry again will pass the four million unit mark this year, marking the *fifth* consecutive year with this record.

All those attending the summer meeting of AHLMA, the industry's cooperative association, must have felt the strength of the optimistic feeling which ran through the entire meeting.

Industry sponsored research may be expected to serve as a guide for product improvement by the research and engineering departments of individual manufacturers. There has been genuine improvement in design for both appearance and serviceability in the industry's products, but our visits with engineers would indicate that other important changes and refinements are on the way.

Many industry leaders are convinced that greatly accelerated sales and promotion programs effectively placed behind current products can and will keep industry sales at present high levels, with a good chance of setting new records during the coming months.

A sound public relations program has unquestionably been a most important help in the forward motion and increasing acceptance of home laundry equipment.

*Dana Chase*  
EDITOR AND PUBLISHER

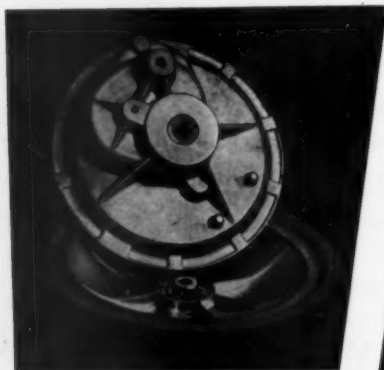
Home Laundry Equipment Sales — First Six Months			
	1954	1953	1952
Washer Sales . . . . .	1,662,100	1,828,977	1,423,629
Dryer Sales . . . . .	293,970	263,201	227,463
Ironer Sales . . . . .	44,808	98,981	86,423
	2,000,878	2,191,159	1,737,515

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MAGNESIUM  
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A typical ACME casting for a defense product. Fin sections have a wall thickness of  $\frac{3}{16}$ "



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We produce light metal castings weighing from a few ounces to hundreds of pounds.

Engineering knowledge and production experience can readily mean the difference between success and failure in using light metal castings.

Over 32 years of engineering and foundry experience are back of ACME service.

ACME of Chicago has a complete engineering service. We will consult with you during the design stages of your product. Consultation with experienced engineers at this stage of your planning may save you many headaches and dollars on production jobs.

*Your inquiries and requests for information are always welcome.*

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## 2 INTEGRITY of Design

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## 3 INTEGRITY of Personnel

You can **depend** on the security of any confidential design information given Firestone.

Firestone Industrial Products Co.  
AKRON 17, OHIO



*Above: Mackinac Island from the ferry. Left: Approaching the Grand Hotel. Right: Beautiful Grand Hotel from the St. Ignace ferry.*

**finishfotos**

## AHLMA meets at MACKINAC

**American Home Laundry Manufacturers' Association holds one of its best meetings in a spirit of optimism for the future of the home laundry equipment industry**

**O**PTIMISM about business in general, and about rising sales for the last half of this year specifically, prevailed at the semi-annual meeting of the American Home Laundry Manufacturers Association. This year's event was held July 23-27 at Grand Hotel, Mackinac Island, scene of many other successful meetings.

As is customary, hosts for the summer meeting were AHLMA's Associ-

ate members. Chairman of the group for this year's outstanding event was C. C. Daily, western division sales manager for Firestone Industrial Products Co.

### **Predict sharp rise in sales for second half of year**

Sales of home laundry appliances in the second half of 1954 will be up as much as 50 per cent over first-half business, according to manufacturers'

estimates obtained in an industry-wide poll conducted by W. Homer Reeve, president of AHLMA, and head of Easy Washing Machine Corp.

Reeve predicted that out of an estimated total sales of 11,500,000 major appliances going into American homes this year, 4,000,000 or more "will be our own washers, dryers and ironers."

One manufacturer was reported as saying that the reason he was so optimistic about second-half business is because of "the change in attitude of our distributors and dealers from the latter part of 1953. Then there was much talk of the possibility of a recession. Today there is an optimistic outlook among them."

Reeve added that he did not think that "all of this confidence is too



*Mrs. Daily and C. C. Daily (Firestone) who was chairman of the Associate's group which sponsors the industry's summer meetings.*





much out of line. I think our members know what they are talking about. . . . It is estimated that nine out of every 10 American families are possible customers for one or more major appliances."

Reeve concluded that "We may, some day, come to the time when we will have complete saturation of washers, dryers and ironers. But that will be nothing to fear. It will be something to welcome. It will mean that every homeowner in the country will be sold on our three products. What a replacement market that will be for all of us!"

#### **Ideas on improving efficiency in purchasing**

Galen B. Price, manager of purchasing research, Ford Motor Company, presented some highlights of a Ford program "for improving efficiency in purchasing as we have in

the fields of direct labor and manufacturing costs."

Top management of each of more than fifty major suppliers has been invited within the past year to discuss the program in detail with Ford's principal purchasing officers, Price revealed.

"Effective improvement in our purchasing activity could not be accom-

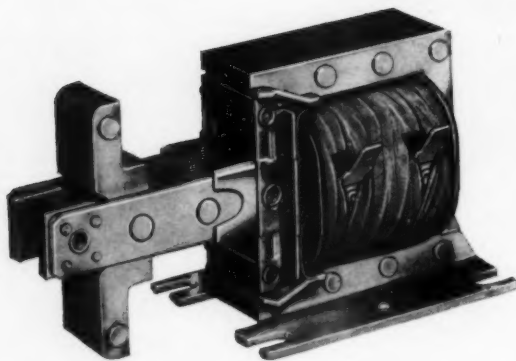
plished unless comparable improvements and increases in efficiency were made by our suppliers partners," he said.

Betterments in Ford purchasing practices were described by Price as ensuring that the buyer is permitted to concentrate on buying, with specialized assistance to him in the fields

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*Left to right: Donald B. Anderson (Nagel-Chase), program committee chairman; Dr. Don Phillips (Hillsdale College), speaker; and Russ Lawson (Monarch Aluminum), program committee member.*





*Solenoids by Soreng—where quality and  
cost meet to serve the component require-  
ments of the Home Laundry Industry.*

**SORENG**

• **PRODUCTS CORPORATION**

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**HL-8**

**SEPTEMBER • 1954 finish**

IT HAPPENS EVERY DAY...

# Tropical heat wave

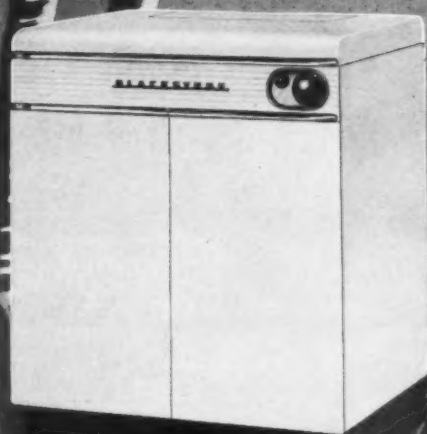
## BLACKSTONE DRIER

198 degrees in the shade... a tropical heat wave feels like a fresh ocean breeze. Still, that's the temperature required inside a Blackstone Drier to fluff-dry wet wash in a jiffy.

That's all very well for the clothes... but it's no easy life for the finish. Heat and humidity are severe tests of its durability.

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## The home laundry industry welcomes a new executive leader

**A**PPPOINTMENT of Guenther Baumgart as executive director of the American Home Laundry Manufacturers Association was announced by W. Homer Reeve, head of the organization and president of Easy Washing Machine Corp., at the industry's summer meeting. The association's members produce more than 95% of all washers, dryers and ironers sold in the United States.

Baumgart was manager of the membership department of the Chicago Association of Commerce and Industry. He was the unanimous choice of the home laundry appliance group's selection committee.

With the Chicago organization more than ten years, Baumgart worked with about sixty committees representing various Chicago industries. He was active in market research, association program activities and member relations and service. He also represented the association in liaison work with the federal government.

AHLMA'S new executive director earlier was a market analyst for the Batten, Barton, Durstine & Osborne advertising agency, and for radio station WHO, Des Moines.

At the University of Chicago, he specialized in marketing and statistics. He is past president of the Chicago chapter of the American Statistical Association.



*AHLMA president W. Homer Reeve, of Easy Washing Machine Corp., welcomes Guenther Baumgart as executive director of the association with a convention badge.*

finishfoto

### A statement by the new AHLMA executive director

*Guenther Baumgart*

**I** am honored with my appointment as executive director of The American Home Laundry Manufacturers' Association.

It is an association of the finest of manufacturing concerns and it has, for almost forty years, been a worthy

servant to the industry which it represents.

The executive committee made a wise and necessary move, in my judgment, when they provided for a stronger and better integrated type of trade association operation in

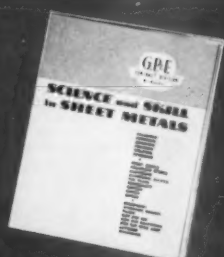
AHLMA. The continuing rapid growth of the home laundry equipment industry and the increasing complexity of the present day American economy amply justify their action. I hope I may live up to their high expectations. to Page HL-12 →



**if** you need ... LARGE AND MEDIUM-SIZED  
**SEAMLESS STAMPINGS**  
 we offer ... SKILL ... MEN ... MACHINES ...  
 plus complete finishing and assembly facilities



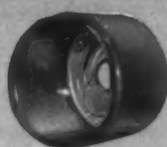
Send for your free copy of our booklet—"Science and Skill in Sheet Metals." It illustrates many jobs produced for G. P. & F. customers ... and gives interesting information on our abilities and facilities.



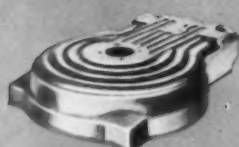
**G.P. & F.**

Do you have a metal product—or a part of a product—that has to be stamped or drawn? Then it's time to take a good look at what G. P. & F. has to offer. We have the manpower, the machines, the facilities. We can handle your *complete* job from start to finish—relieve you of production details and responsibilities—even package and ship your finished product, if you wish. The booklet shown on the left tells the complete story. Write for it today!

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**OVERFLOW TUB FOR AUTOMATIC WASHING MACHINE**  
 Welded Construction  
 Vitreous Enameled  
 Height, 21"—Diameter, 24"  
 (Also conventional and spin tubs)



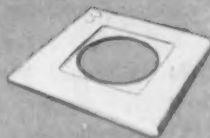
**BASE FOR POWER LAWN MOWER**  
 Seamless Drawn Steel  
 Length, 26"—Width, 19½"  
 Height, 4¾"



**AMMUNITION BOX (U.S. ORDNANCE)**  
 Carbon Steel—Spray Painted  
 Length, 10"—Height, 7"  
 Width, 3¾"



**POWER TOOL SAFETY GUARD**  
 Seamless Drawn  
 Length of Cover, 29¾"  
 Height of Cover, 5¼"  
 Width of Cover, 10¾"



**TOP FOR AUTOMATIC WASHING MACHINE**  
 Stainless Steel and Vitreous Enameled  
 Length, 26"—Width, 25"  
 Height, 2½"  
 (Also dryer tops)



**SYRINGE HOLDER**  
 Stainless Steel Box, Cover and Rack  
 Length, 8½"  
 Height and Width, 3"



**BASE FOR SWIVEL CHAIR**  
 Seamless Drawn Carbon Steel  
 Length, 25"—Height, 4"



**COMMERCIAL HAND DRYER**  
 Seamless Drawn—Vitreous Enameled  
 Length, 12"—Width, 10½"  
 Height, 6¼"

**GEUDER, PAESCHKE & FREY CO., 1605 W. St. Paul Avenue, Milwaukee 1, Wisconsin**

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HL-11



*Top and bottom: Snapshots taken at banquet held at the Grand Hotel.*

*Center: Roundtable discussion during Dr. Don Phillips' session.*



→ for Page HL-10

There are certain basic reasons why AHLMA, and many of the other well defined trade associations, are a valuable asset to their industries. Trade associations generally, and AHLMA in particular, are in a position to do things for the industry which no member could do for himself—or which could not even be done by all of the members acting independently. Such necessary objectives can be accomplished only through a trade association composed of companies with like problems and like ambitions. Forcefully expressing the industry's views to the Federal Government is one example. There are many others. It is my fond expectation that with the wholehearted cooperation of officers, committeemen and members, the American Home Laundry Manufacturers' Association will be an increasingly effective device for our industry along these lines.

A trade association also can do many things which the members could do for themselves, but which they could do far less economically. The proper and legal compilation and dissemination of statistics is an example of this. It certainly is better to incur many of the costs only once — in the trade association — than again and again in each of the member companies. AHLMA has several useful programs of this sort now and, it seems to me, wonderfully rich possibilities for strengthening and expanding these services for nearly every committee.

AHLMA, as our constitution states, is dedicated to fostering and promoting a feeling of fellowship and goodwill among its members and to advancing generally the welfare of the washer, dryer and ironer industry on broad and equitable lines.

I shall devote my entire thought and energy toward these worthy objectives.

If I were to be granted one request by the members of my association, I would ask for the wholehearted personal participation of all of the executives in the member companies — especially the policy determining officials.

Active personal interest is the one essential element of any association.

In the contacts I have had thus far, AHLMA members have certainly exhibited a generous measure of this sort of cooperation. It should be a pleasant and easy task to accomplish the executive committee's objective of a stronger and more effective association — I look forward to working toward it.

My thanks to *finish* for the opportunity to say these things which are in my thoughts as I take office. *finish* is a publication which I know and respect and which I look forward to using regularly in my new position.

## Mackinac meeting

→ from Page HL-7

of market data, objective prices and price movements; make management more aware of the purchasing function; establishing purchasing budgets and measuring performance against them, and, finally, the enlisting of cooperation by the supplier, "aimed at making him more efficient, not cutting into his profits."

Price reported two outstanding accomplishments as a result of inviting Ford's principal suppliers to confer with the company's top purchasing officers. He expressed these as "the fact that our suppliers were represented at these meetings by their policy officers, together with manufacturing, engineering and purchasing executives" and "our suppliers' enthusiastic endorsement of our program." In a number of cases, he added, we have had reports from our suppliers outlining cost improvement programs which they are undertaking, and, in some instances, already have had important dollar and cents results.

"For example, one supplier inaugurated a detailed review of his cost elements, including administrative and central office expenses. He has been able in the past few months to reduce costs by several million dollars. He has passed on to us savings ranging up to 10 per cent on our purchases and expects his profit position during 1954 to be equal to that of 1953, or better.

to Page HL-32 →

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Top and bottom: Snapshots taken at banquet held at the Grand Hotel.

Center: Roundtable discussion during Dr. Don Phillips' session.







## We've specialized in stampings for the washing machine industry

**T**HE problem of supplying washing machine tubs has been turned over to us by leading manufacturers time and time again.

We're glad to have the reputation of leadership in the field. And we accept the responsibility. You will find Mullins ready always with the best technical knowledge and equipment. You will find an alert, pro-

gressive attitude—an honest belief that the problems of your business are our problems too.

In planning for the future or for the most economical source for current production, consult with us. Mullins has made many notable contributions to the industry's progress and hopes to make many more.



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HL-14

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Automatic

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TREASURER:  
Howell G. Evans  
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EXECUTIVE DIRECTOR  
Guenther Baumgart

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Public Relations and Publicity

William Shaw

## Automation is in the air

by *V. F. Peterson* • CHAIRMAN, AHLMA AUTOMATIC WASHER DIVISION, AND SALES MANAGER, HOME LAUNDRY EQUIPMENT, NORGE DIVISION, BORG-WARNER CORPORATION



Automation is in the air. Every day we hear and read more about the trend toward full automaticity in manufacturing. It even is conceivable, although improbable, that a highly complex machine could be manufactured, straight through in one series of operations from ores and other raw materials to the complete finished product, ready to operate, without the intervention of human hands along the line.

Already, of course, such full-automatic operation is fairly common in

less intricate sequences. Candy is manufactured almost automatically from the moment when tank-cars of prepared sugar syrup are spotted on a factory's private track. Many bakery products are the result of the same sort of virtually "manless" procedure. These are only two of many such practices.

Therefore it readily can be seen that the automatic washer is an identical great advance over old hand methods, applied to the home field yet similarly planned for the benefit of the ultimate consumer, in this case the housewife.

There always will be some market

for the old-familiar style of washer, among women willing to do the work required to operate such a machine and unwilling to spend a relatively few additional dollars to ensure themselves full relief from the exertion and even real labor which old hand methods demand.

The trend, however, will continue to be definitely toward wider and wider use of the automatic washer, as it will be toward increasingly greater use of the automatic dryer and ironer.

Automation, in the fullest sense possible, is as definitely on the way in the home as it is in industry.

## Dryers are "hotter"— in more ways than one

by Ray G. Halvorsen • CHAIRMAN, AHLMA DRYER PRODUCTS COMMITTEE AND VICE PRESIDENT IN CHARGE OF SALES, HAMILTON MANUFACTURING COMPANY



Automatic tumbler dryers for the family wash are hotter in more ways than one.

It is just plain common sense for a woman to turn any job over to a machine if it will do that job faster, or more easily, or better than she can do it by herself. The dryer has all those three standout advantages, and many more.

Lots of women, — and dealers, —

have found this out already. In some communities dealers sell one dryer to every three washers. There is good reason why this should be the proportion everywhere. The day is not too far distant when almost every house with a washer will have a dryer.

The dryer can be used with any style of washer, which makes it have equally great usefulness in any home.

Three-fourths of a housewife's walking, bending and lifting are avoidable, according to recent time-and-motion studies made by the home

economics department of Wayne University, Detroit. The percentage of avoidable labor is even greater than this in the case of the automatic tumbler dryer.

"Walking, bending, lifting" just about describe the task of carrying out a washing, hanging it, taking it down and carrying it back into the house.

It's facts like these which paint a bright and profitable picture for anyone who lives up to his opportunities in the dryer business.

## "Literature"—and the conventional washer

by Frank Breckenridge • CHAIRMAN, AHLMA CONVENTIONAL WASHER DIVISION, AND PRESIDENT AND GENERAL MANAGER, AUTOMATIC WASHER COMPANY



I remember hearing a story about the late George Horace Lorimer, for a long time famous as the editor of The Saturday Evening Post. He mentioned to a friend of his, an English professor at the University of Chicago, a certain article which just had been published in The Post. "But of course you didn't see it," he said jokingly to the professor, "the Post isn't literature."

"Pardon me, George," Mr. Lorimer's friend replied, "any publication which sells that many copies every week becomes literature."

I feel somewhat the same way about the conventional-type washer. It cannot be laughed off. Anything which sells at the rate of 1,500,000

"copies" per year, which is what this long-familiar style of washer does, becomes "literature".

For a good number of years before World War II interrupted, and through the entire period since the end of that war, women in this country have bought 1,500,000 conventional-type washers each and every year. Certainly such strong continued demand by them proves that this type of washer is no passing fancy. The industry started with this washer, it grew to big proportions with this washer and today, if I am right with my figures, and I am very sure I am, more than 25,000,000 women are using this washer.

This isn't just habit because such washers now are in the homes of many fourth-generation users. Many

younger couples, people with infants and little children, buy conventional washers. They fit better into limited budgets and, for the convenience of many mothers they wash one load at a time, and fully as well, as any other kind of washer. Lots of older women grew up with conventionals, like them, and see no good reason to change, so buy their second, third, or even fourth conventional in a line. Nine-tenths of the washers on farms are conventionals. Most farmers can afford to buy any washer they please, yet, the wives of many of them, with big and dirty washings to do, stick to conventionals.

These are some of the reason why I am optimistic over the market for conventional washers throughout the whole foreseeable future.



Two of the various types and styles of pulleys produced by Danielson. For production economies, Danielson stamped, spot welded pulleys can't be beat.



Our plant is specially geared for this type of work where high production and low cost are a prime factor . . . . and yet quality and precision workmanship are always our goal.

Our Press Department is equipped with presses ranging from 5 ton to 300 ton capacity, and specializing in deep draw work for Appliance and other Metal Products Manufacturers. Other services include: Shearing — Circle Shear — Spot Welding — Arc Welding — Silver Soldering — Hydrogen Brazing — Polishing — Degreasing — Painting — Assembly — and our complete Tool and Die Department will furnish precision tooling for your own fabricating department.



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Write, phone, or wire, today!

make

# Danielson

your stamping headquarters

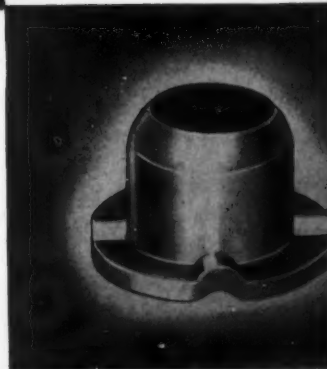
for **PRECISION**

**WASH MACHINE**

**PARTS . . . . .**

◀ **CASTER SOCKETS  
AND BRACKETS  
...OUR SPECIALTY**

Here are a few of the types of caster sockets and brackets manufactured by Danielson. All are produced with extreme economy and exact specifications. Let us figure on your needs.



◀ Danielson stamped **WELD NUTS** for use on automatic washing machines, dryers, refrigerators and other similar products requiring leveling at point of installation. Danielson **WELD NUTS** made in a sequence stamping process are equal in ability and strength to any machined nut but cost less.







te in Hawaiian party





# Whirlpool

***proves that the right finish is an important retail selling feature***

Whirlpool knows that the finish leaves an important first impression with the customer; an impression that will continue as long as the beauty of the finish keeps pace with the mechanical quality of the product.

They know, too, that the demands of competition leave no time to rest on past success. That's why the finishing operation, like all others at Whirlpool, is marked by constant research and experimentation.

That is why we are kept continually on the job . . . both as an approved source for finishing materials, and as an advanced research laboratory. Our staff is working hand in hand with Whirlpool to anticipate the finishing needs of tomorrow's market.

#### WE INVITE INQUIRIES

*From manufacturers interested in finishes, custom created for specific requirements of production and saleability. Address your correspondence to the Metal Finishing Division.*

*The Better the Finish, the Better the Buy*



## GRAND RAPIDS VARNISH CORPORATION

MAKERS OF THE FAMOUS GUARDSMAN<sup>®</sup> FINISH AND GUARDSMAN<sup>®</sup> CLEANING POLISH

GRAND RAPIDS, MICHIGAN

# Tubs

*any size, shape or type*



The shape of a tub, or its size or its type, has a lot to do with a washer's efficiency. So it's small wonder that so many leading washer manufacturers depend on Ingersoll to produce their tubs in the sizes, shapes and types required.

Ingersoll's extensive experience covers the whole wide field of tub design and production. Ingersoll's engineering skill assures adaptation of design to mass production techniques. Ingersoll specialized equipment can turn out any type tub — from turtle-neck to wrap-around — with the efficiency that means high quality production at economical cost, and deliveries that dovetail with your own assembly schedules.

If you have a tub problem, toss it to Ingersoll. Chances are, we've already got the answer; if not, we know how to get it. No obligation, of course.

## Ingersoll



**INGERSOLL PRODUCTS DIVISION**

**Borg-Warner Corporation**

310 S. MICHIGAN AVE., CHICAGO 4, ILL.





BENDIX HOME APPLIANCES DIV. OF AVCO

## TYPICAL PRODUCTS OF TOMORROW washers - dryers - ironers



CALORIC STOVE COMPANY



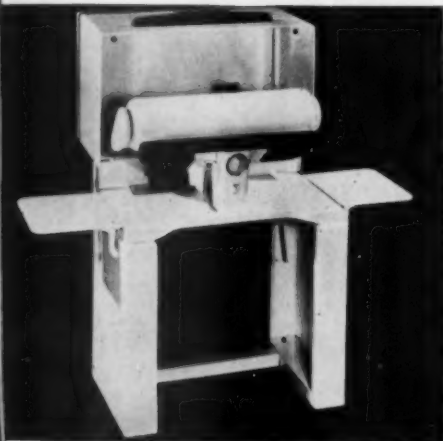
BEATTY BROS. LTD.

### "saturation of this appliance will grow quickly"

AVCO — "The industry's automatic home laundry trend must inevitably be away from separate automatic washers and dryers and toward a single unit that does both jobs automatically. This is not said because Bendix happens to have such a unit, but because the American homemaker has come to expect more and more automaticity. She constantly asks 'why' washers and dryers cannot be combined into single units, and the question is so logical every manufacturer recognizes the need for a concrete answer.

"Although relatively low today, the saturation of this appliance will grow quickly, far faster than either the automatic washer or dryer, both of which it ultimately will replace." — PARKER H. ERICKSEN, VICE PRESIDENT AND APPLIANCES GENERAL MANAGER FOR BENDIX & CROSLLEY.

IRONRITE, INC.



### "the year will compare favorably with 1953"

BEAM—"We expect to continue through the year on approximately the same schedule. We consider the first quarter a successful one, and that the year as a whole will prove satisfactory and compare favorably with 1953. We concur in the enthusiasm that was expressed at the mid-summer meeting of the American Home Laundry Manufacturers Association." — GEORGE P. CASTNER, GENERAL MANAGER.

AUTOMATIC WASHER COMPANY





# HOME LAUNDRY INDUSTRY



BEAM MANUFACTURING CO.

## "discount jitters are unjustified"

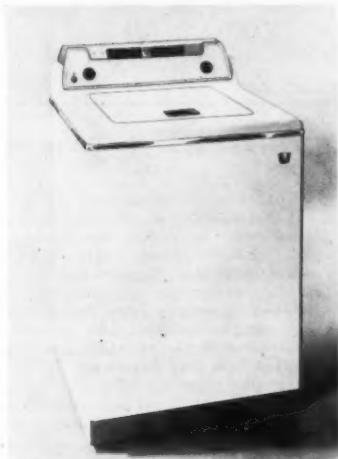
CRISTONE — "The current topic of conversation and the cracker barrel these days is about discount selling. This is getting to be such a popular term that even some of the fair-haired boys are getting on the bandwagon for fear they will be cut on some of the gravy. It is hard to tell these days just who is a discount-seller and who is not. We all admit, of course, that the trend is dangerous if it gets to the point of forcing the retailer out of the wall. But, this is unlikely if all remember that the appliance industry has been through these cycles many times and yet has produced an unprecedented volume of business with good profits at all levels.

While we shouldn't subscribe to a complacent, do-nothing attitude, neither should we spend our time bemoaning our misfortunes. Those of us who have been in this business longer than a year will admit know that creative selling is what it is. We know also that the discounter fails miserably in this department and that his volume is only that which is attracted into his store by a price lower than the next guy's. As soon as the retailer wakes up and learns that he has to sell his merchandise off his floor, he will automatically create new avenues of appliance volume which the discounter could never enjoy. Thus, public confidence will be restored in legitimate merchandising and the discounter will fall by the wayside. Remember way back when they took us away from us, and we couldn't produce fast enough? You don't remember any successful discount houses flourishing then.

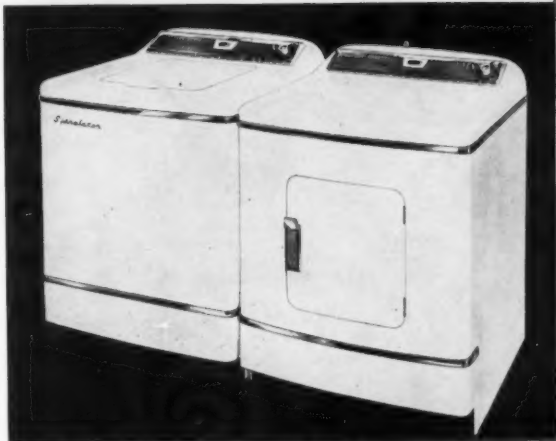
Now, with automatic washers in the picture and more and more manufacturers working toward even more complex refinements of the product, the need for specialty selling is far greater than ever before. Also, these new things create a new demand market. Wouldn't it be nice to have specialty salesmanship and a sound market, too?" — JOHN M. WICHT, VICE PRESIDENT.

## "most promising"

MAYTAG — "Of all the products handled today by appliance retailers, home laundry equipment continues to be the most profitable and the most promising for the future." — ROY A. BRADY, VICE PRESIDENT, MARKETING.



THOR CORPORATION



EASY WASHING MACHINE CORP.

## "biggest advertising and selling drive in Easy's history"

EASY — "Plans for the biggest concentrated advertising and selling drive in Easy's history have just been completed. Beginning in September, a completely new and integrated sales drive will get under way on all Easy products — Automatic, Spindrier and Wringer. The program includes a national magazine schedule spearheaded by seven leading magazines.

"Coordinated with the magazine and newspaper campaigns will be a dealer-performance sales contest, a concentrated dealer coverage drive, and a new round of on-the-sales-floor product training meetings.

"We're making an all-out effort to bring Easy prospects into the dealer's store, with a new sales theme in our advertising and new traffic-building promotions." — R. E. WEISS, ADVERTISING & PROMOTION MANAGER.

SPEED QUEEN CORPORATION





NORGE DIVISION, BORG-WARNER CORP.



ONE MINUTE WASHER CO.

## MORE INDUSTRY PRODUCT



TEMCO, INC.

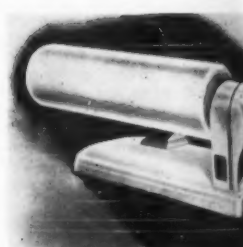


DEXTER DIVISION, PHILCO CORPORATION

### "the features the homemaker wants"

WESTINGHOUSE—"We feel the features the homemaker wants most in laundry equipment of today are those which are time and labor savers—the automatic features. The desire for completely automatic appliances has been increasing among homemakers until it has put the manufacturer of non-automatic and semi-automatic washers and dryers in a less favorable competitive position. I feel certain that this trend will continue." — J. J. ANDERSON, MANAGER, LAUNDRY EQUIPMENT DIVISION.

WESTINGHOUSE ELECTRIC CORPORATION



IRONER DIVISION, SPEED QUEEN



### "too much sobbing—too little selling"

THOR — "There is too much sobbing, too little selling. It is time we faced the fact that the housewife is over, that we are in a 'sell or sink' market."

"There are three elements necessary: First, an outstanding line-leading product priced for today's market. The washer industry must have machines which are mechanically improved and which are designed to be displayed. The washer is no longer an appliance that is hidden in the basement. It must be an attractive appliance which a woman is proud to have in her kitchen or utility room.

"Even an outstanding product must be backed with strong advertising and sales promotion. We are in a market of unparalleled competition. We must communicate our sales message forcefully and often to attract the consumer.

"Most important of all, our products must be placed in the hands of salesman who can and will hit hard. We can produce a good product and advise the public of its worth through print, but without the follow-through by the salesman, it else will have been in vain." — THOMAS R. CHAPMAN, GENERAL SALES MANAGER.



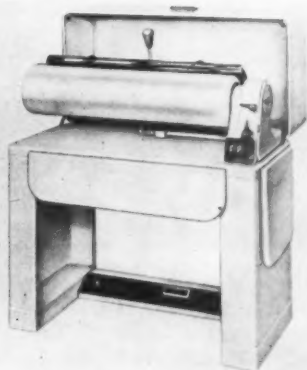
BLACKSTONE CORPORATION

**"we anticipate an increase"**

**SPEED QUEEN** — "Our volume so far in 1954 compares favorably with 1953. We anticipate an increase during the balance of the year, which should put us ahead of 1953. Our optimism is based on these factors: (1) current dealer and distributor inventories are normal, (2) general business conditions are improving, and (3) in August, Speed Queen introduced new lower priced automatic washers and dryers to improve our competitive position in that part of the home laundry field." — H. A. BUMBY, PRESIDENT.

**"saturation points years away"**

**BEATTY BROS.** — "Canada has yet to 'creative sell' the automatic washer, the automatic dryer, the ironer, the home freezer and the air conditioner — with saturation points years away. As for other white goods, the trade-in turnover still presents a buoyant market as good as 'powerful quality selling' can make it." — D. B. BEATTY, GENERAL SALES MANAGER.



THE MAYTAG COMPANY

**"the brightest spot in the appliance picture"**

**PHILCO** — "While it is too early to reveal the details, I can tell you that we will have a complete new line of Dexter home laundry equipment in 1955. We are tremendously thrilled with the way this new line is shaping up, because it is without any doubt the outstanding line we have ever had in the long history of our company. According to present plans, our great new Dexter line should be ready for showing in January."

"As you know, early this year we became a division of Philco Corporation. With the additional strength of our new parent corporation in research and engineering, we feel certain that we will have a banner year in 1955. As you probably realize, home laundry equipment has been the brightest spot in the appliance picture all during this current year. With our new strength in an industry whose outlook is very bright, we are predicting great things for Dexter next year and in years to come." — WARD L. HUNT, EXEC. VICE PRESIDENT, DEXTER DIVISION.

finish SEPTEMBER • 1954



HAMILTON MANUFACTURING COMPANY

**"dealers and distributors reflect growing confidence"**

**ONE MINUTE** — "The outlook for the washer business, in our opinion, is very encouraging — employment remains high, consumer savings are increasing, constructions of homes are increasing and the thinking of dealers and distributors reflect growing confidence in the opportunity to produce increased sales, but they recognize today's market requires aggressive sales effort." — CHARLES BASSETT, SALES MANAGER.

WHIRLPOOL CORPORATION

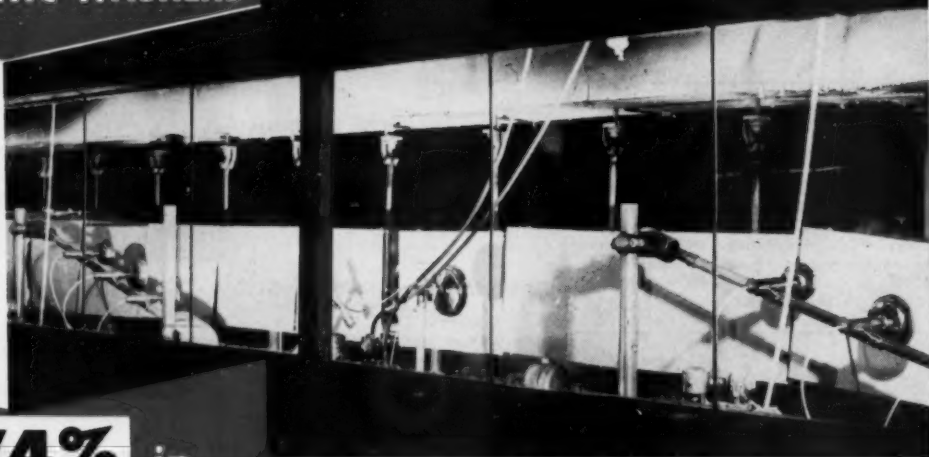
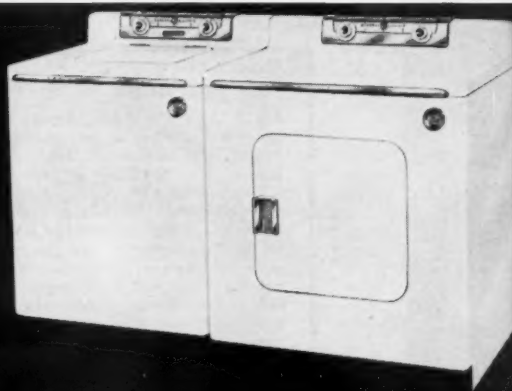




with the  
**RANSBURG  
NO. 2 PROCESS**  
Paint mileage jumps

**84%**

in the finishing of  
**G-E AUTOMATIC WASHERS**



...and **74%** in  
finishing **G-E DRYERS**

## Production is increased and quality of the work is improved over former hand spray method

● When General Electric formerly hand sprayed their home laundry equipment—automatic washers and dryers—they painted 9.74 washers with a gallon of paint. Now, in the new and modern plant at Appliance Park, Louisville—where they're using the Ransburg No. 2 Process—they get 17.97 units per gallon of paint. An increase of 84%!  
And, where they formerly got 5.49 dryers per

mixed gallon of finish, now—with the Ransburg No. 2 Electrostatic Spray Process—they get 9.56 dryers per gallon of paint. An increase of 74%!

Along with increased production, G.E. is getting a more uniform, higher quality finish. Another typical, on-the-job-example of the unmatched efficiencies of the Ransburg No. 2 Process of electrostatic spray painting!

*Ransburg*

**ELECTRO-COATING CORP.**

Indianapolis 7, Indiana

Want to know what Ransburg Electrostatic Processes can do for you in your finishing department? Ask about the complete facilities for test-painting YOUR products—under simulated production conditions—in Ransburg laboratories.

**RANSBURG**



# EPON<sup>®</sup> RESIN does it!

**WESTINGHOUSE Laundromat gets a tougher,  
more corrosion-resistant  
primer at much lower cost!**



Laundromat has a baked Epon, flow-coated primer formulated by Pittsburgh Plate Glass Company. Film uniformity calls for only the briefest scuff sanding before application of the white enamel top-coat.

## HERE'S HOW...

The protective finish on a washing machine is exposed to severe conditions during its service life. It must, for example, withstand abrasion, impact, attack from highly active alkalis and detergents.

Recently, Westinghouse engineers adopted a greatly improved finish for Laundromat components, using a new primer based on Epon resin. Applied by flow coating, the primer is only one-third the thickness of previously used primers. Tests have established a *three-fold* improvement in coating durability under severe conditions . . . and application costs have been materially reduced.

Laundromat components receiving the new Epon resin primer are: top,

front, door, lower front panel, bracings, clamps and bottom pan. Some interior surfaces have *Epon primer* as *their only finish*.

If you need a protective finish like this in your paint program, ask your supplier for Epon resin-based paints and enamels. These formulations have excellent adhesion, high resistance to impact and abrasion; outstanding resistance to moisture, heat and corrosive atmospheres.

. . . .

Write for the brochure "Planning to Paint a Pyramid?" on the variety of applications of Epon resins in surface coatings. You may call on our sales offices for names of manufacturers who sell Epon resin coatings.

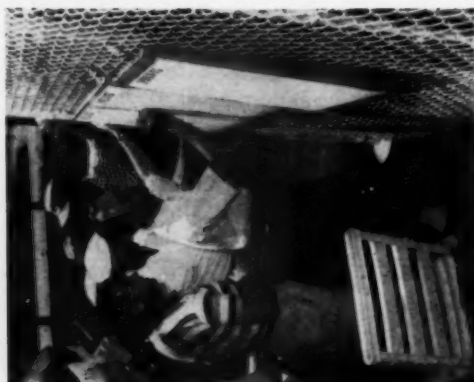


### SHELL CHEMICAL CORPORATION

Chemical Partner of  
Industry and Agriculture  
380 Madison Avenue  
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Atlanta • Boston • Chicago  
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Los Angeles • Newark • New York  
San Francisco • St. Louis

IN CANADA:  
Chemical Division, Shell Oil  
Company of Canada, Limited  
Toronto • Montreal • Vancouver



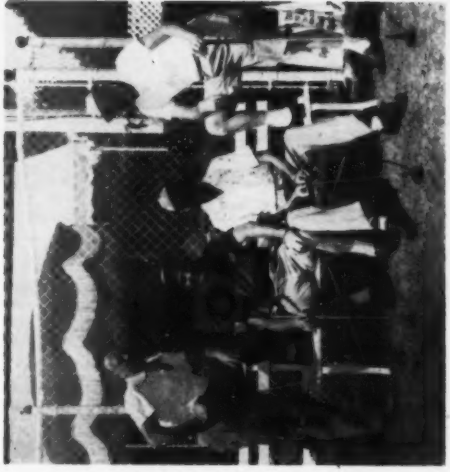
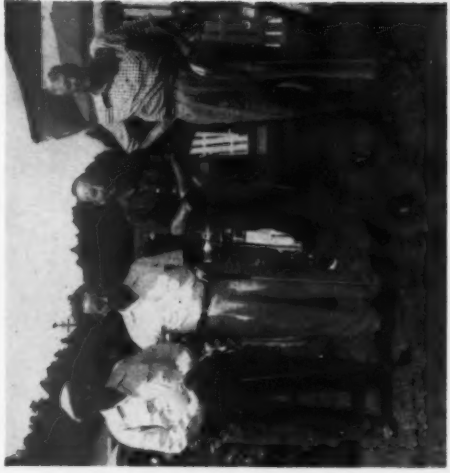
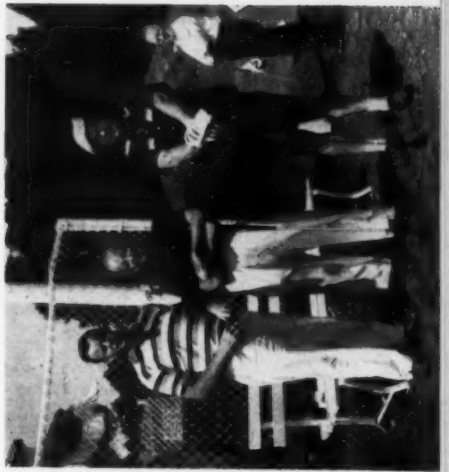
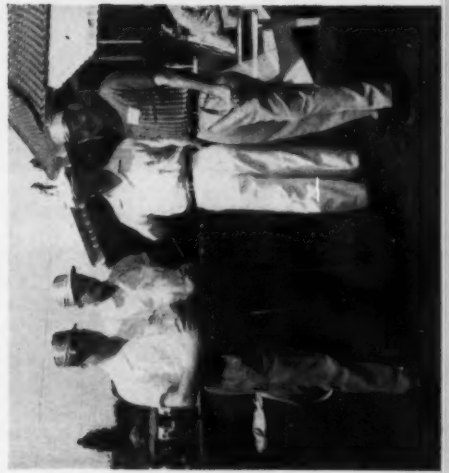
A H L M A

A H L M A

## Golfing at Mackinac

SUMMER MEETING OF AMERICAN HOME  
LAUNDRY MANUFACTURERS' ASSOCIATION

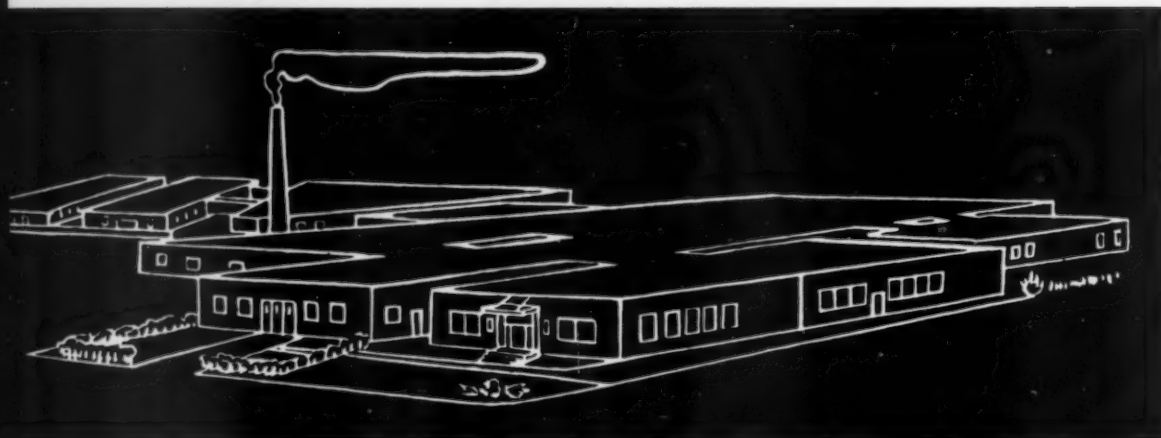








**One Minute Washer Co., Kellogg, Iowa — 1898 to 1954**



## Examples of plant expansion and modernization

**T**HE following reports include examples of plant expansion and modernization programs which are taking place throughout the home laundry equipment manufacturing industry.

Other companies have completed expansion programs within the past few years, and still others will be announcing plans for modernizing and enlarging their present facilities.

### **Apex Electrical Manufacturing Co.**

Apex has announced that it is building a large fibre-glass foundry addition to its Cleveland, Ohio, plant, to be used for the fabricating of fibre-glass parts for laundry equipment as well as defense contract work.

### **Easy Washing Machine Corporation**

A 200,000 sq. ft. plant addition was completed in May of this year by Easy at a cost of two and one-half million dollars.

A modern Home Economics Department has just been completed for use in training sales personnel, testing laundry aids, the so-called miracle fabrics and all types of home laundry equipment. The department contains a cooking area, dining area, and a laundry area. Training and testing activities are under the direction of Miss Rose Mary Guerra, director of home economics.

### **Automatic Washer Company**

A fifth floor has been added to Automatic Washer's plant in Newton, Iowa. It houses the most modern of finishing systems. The machines are processed virtually untouched by human hands through a five stage cleaning and phosphatizing system, flow cost primer applicator, prime bake oven, and then on to receive a spray coat of white enamel and finish bake. The result is a gleaming white enamel designed to insure a permanently beautiful machine.

### **Beatty Bros. Limited**

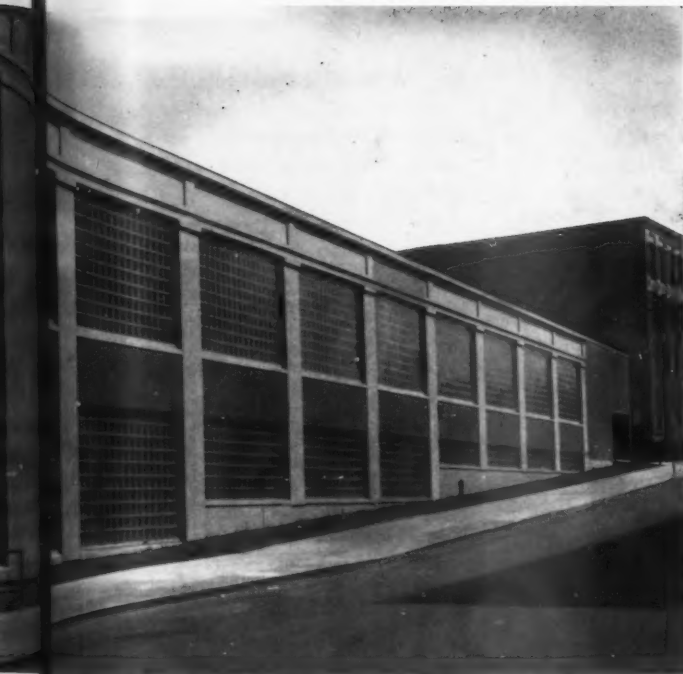
A new centralized warehouse and service depot will be opened in Toronto in the near future by Beatty. The new brick building will have an overall floor space of 10,600 sq. ft., and establishes Beatty warehouses and branches at nine locations across Canada.

### **Norge Division, Borg-Warner Corporation**

Norge has reported an expenditure of \$1,600,000 to increase production of laundry equipment and ranges at Herrin, Ill., and Effingham, Ill., plants. The company also plans to spend nearly \$500,000 on new refrigerator manufacturing facilities at its Muskegon, Mich., plant.

Norge plans have been explained to suppliers by Judson Sayre, president. Nearly 100 attended a suppliers' meeting for laundry equipment and range suppliers only to hear plans for increased production on these appliances.





*Washing Machine Corp., Syracuse, N. Y.; recently completed this building housing their new home economics department laboratory.*

#### **Blackstone Corporation**

Blackstone has purchased Swanson Machine Corp., whose Jamestown, N. Y., plant adjoins the Blackstone plant, and consists of several two-story structures providing approximately 85,000 sq. ft. of area.

R. A. Lenna, Blackstone president, stated that the Swanson properties will be taken over November 1. The Swanson purchase was a planned part of Blackstone's expansion program undertaken four years ago. Since that time, 310,500 sq. ft. of manufacturing space has been added to existing facilities, including the erection of a new plant and offices, and the purchase of Elite Furniture Co., also of Jamestown.

#### **Westinghouse Electric Corporation**

More than 2½ million dollars is being spent this year to rearrange and expand the Westinghouse Electric Appliance Division plant at Mansfield, Ohio, as the first step in a program to approximately double production of several major appliances (including home laundry equipment), and substantially increase production of portable appliances, according to J. H. Ashbaugh, vice president.

"Over two million dollars of the expenditure will be for new equipment," said Ashbaugh, "much of which will be used to replace machinery now being shipped to our new plant in Columbus, Ohio, which will eventually produce all Westinghouse refrigerators and freezers. Other new equipment, and some old equipment which will be shifted, will be placed in a new addition to the plant—a four story structure providing an additional 34,000 square feet of working area.

#### **Hotpoint Company**

More than 50 per cent of the 1954 scheduled modernization work has been completed on Hotpoint's home laundry manufacturing plant in Chicago, John C. Sharp, president, reported.

Sharp said that new methods of building construction, the world's largest enameling furnace, one of the largest pickling machines of its type, and some seven miles of "upstairs" conveyor lines are some of the features the new plant will incorporate.

Other methods and equipment such as seam welders, ovens, picklers, presses, assembly lines, dry lubricating systems, roller levelers, finishing methods, ground coat systems, moving test lines, pre-assembly test lines and a new shipping room are all a part of the modernization program, Sharp said.

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*Automatic Washer Co. plant, in Newton, Iowa, showing fifth floor addition of 10,000 sq. ft. erected on roof of original building.*

finish SEPTEMBER • 1954



### Summer meeting

→ from Page HL-13

"Still another supplier has come back to us with a definite schedule of future price reductions. These are based upon planned cost and facility improvements, not upon mere price cutting. They will enable us to

achieve substantial economies in our purchases while maintaining or increasing the profit position of the supplier.

"It is most significant to us," concluded Price, "that in each of these cases of substantial improvements in our purchase prices, the improvement

has not been at the expense of our suppliers but in cooperation with them. The improvements have resulted from true cost reductions which the supplier has been able to share with us, and their accomplishment means an equal or better profit position for the supplier."

## An "opportunity" appliance with less than 10% saturation

by H. L. Travis • CHAIRMAN, AHLMA IRONER DIVISION, AND MANAGER OF RETAIL DISTRIBUTION  
AND HOME LAUNDRY EQUIPMENT, KELVINATOR DIVISION, AMERICAN MOTORS CORP.



Does the automatic ironer have a significant place in the future growth of the home laundry appliance industry?

The variety of opinions on this question are indicated by the action of some manufacturers on the one hand to drop production of ironers altogether, and the comment by other industry leaders that the ironer business is worth saving, in spite of present difficulties.

Of all the major appliance dealer's items, the ironer was perhaps the least likely to benefit in the long run from a sudden and large spurt in sales volume. The high level of activity of 1947 placed hundreds of thousands of machines in homes all over the country, machines that required a relatively high degree of user-education on proper methods of

operation. There were few dealers equipped or willing to take the time to demonstrate ironers properly on the sales floor, much less to follow up with a demonstration call in the buyer's home. How many ironers were sold simply because they were part of the electrical appliance family in the postwar buyers' rush of the late 1940's will never be known. A high percentage were sold to customers who had no clear idea of what was involved in operating an ironer when they bought, and today a shockingly high percentage of the families owning ironers make little or no use of them.

The result is an uninformed owner situation unparalleled in the history of the appliance business. Use-the-user has been one of the most successful means of developing the market for a new appliance; it is difficult to "use the user" today in the ironer field with any degree of success.

Too many of us in the industry simply never learned how to sell the product. The art of specialty selling has been almost lost for more than a decade; the ironer is a demonstration-type product that can be sold, provided the finest specialty selling skills are applied. Easy sales undermined specialty selling, but the return of a competitive buyers' market, whether we like it or not, is applying the pressure necessary to revitalize hard selling techniques.

Ironers can be a good volume item; they are useful appliances that have been sold successfully in the past and can be sold in increasing volume in the future. A saturation position of less than 10% clearly earmarks the ironer as an "opportunity" appliance — a profitable item for those who can and will do the demonstration and follow-up necessary to achieve volume sales.

### HOME LAUNDRY WORKSHOP AT COLUMBIA UNIVERSITY TEACHERS COLLEGE TO PRECEDE 1954 NATIONAL HOME LAUNDRY CONFERENCE

Plans have been announced for a "home laundry workshop" to be held at Teachers College, Columbia University, on November 3, the day preceding the opening of AHLMA's two-day 8th National Home Laundry Conference at Hotel Commodore in New York City. The workshop is the project of Dr. Helen Judy Bond, head of the school's Department of Home Economics.

The Teachers College workshop will be conducted in the midst of Columbia University's 200th anniversary celebration, yet the school has reserved the Teachers College auditorium for staging the home laundry event.

*Is there a*  
**PULLEY**  
*in your*  
**PRODUCT**  
**?**

If there is, it will probably pay you to investigate Nagel-Chase as a source for the V-Belt Pulleys. This organization specializes in the manufacture of welded pressed steel pulleys and have been the sole source of supply for many leading manufacturers for many years.

Nagel-Chase pulleys can be supplied with rolled or flanged rims, and are so constructed that the pulley cannot come loose from the hub. They are precision built and will give years of trouble-free service.

Step down pulleys are made in two styles, with the smaller pulley turned into the hub when its diameter is less than 2", or as an integral part of the large pulley when its diameter exceeds that dimension.

Consult Nagel-Chase on your pulley requirements — you will be repaid in production economies.



**NAGEL-CHASE CASTERS—**  
*the Standard of the Appliance Industry*

Precision built for long hard service, NAGEL-CHASE Casters are manufactured in styles to suit every mobile appliance, from a television set to a washing machine. Made in a wide range of sizes and styles with from 1 5/8" to 3" diameter rollers of strong plastic and hard or soft rubber composition, ball bearing or plain, swivel or plain pintles, and with or without the Nagel-Chase patented, foot-operated brake.

Use casters? Consult Nagel-Chase, specialists in casters for the appliance industry.



...is a dollar earned



Yes, it is possible that we can save you money by having the exact die equipment size that you need. We have at your disposal dies and equipment able to produce almost any size top with 1 1/2 inch or 5/8 inch corner radius. Tops with either 1 inch or 1 1/2 inch depth of flange can also be formed by us. There are many dies to produce pan-shaped pieces — often easily and inexpensively changed to form the part you need.

When you are still planning to use a new Porcelain Enameled part, check with VITREOUS. We may be able to help you save money. No need to go to the expense of building special dies when we have them in our racks waiting to be of service to our friends.



VITREO facilities help you meet the ever-growing demand for porcelain enameled parts by:

1. Acting as a source for stamping as well as enameling.
2. Enameling stampings of your manufacture.
3. Supplementing your own enameling plant.
4. Possibly saving die costs.
5. Quickly solving your color problems.
6. Keeping transportation costs low. (By operating our own trucks, we can often pick up and deliver at the same time, thereby saving most of the cost of one-way transportation.)

*Plan...  
for the Lifetime  
Product*

**VITREOUS STEEL PRODUCTS CO.**

BOX 1791 • CLEVELAND 5, OHIO • (Factory at Nappanee, Ind.)



# THE HOME LAUNDRY HAS CHANGED SOME

## SINCE THE

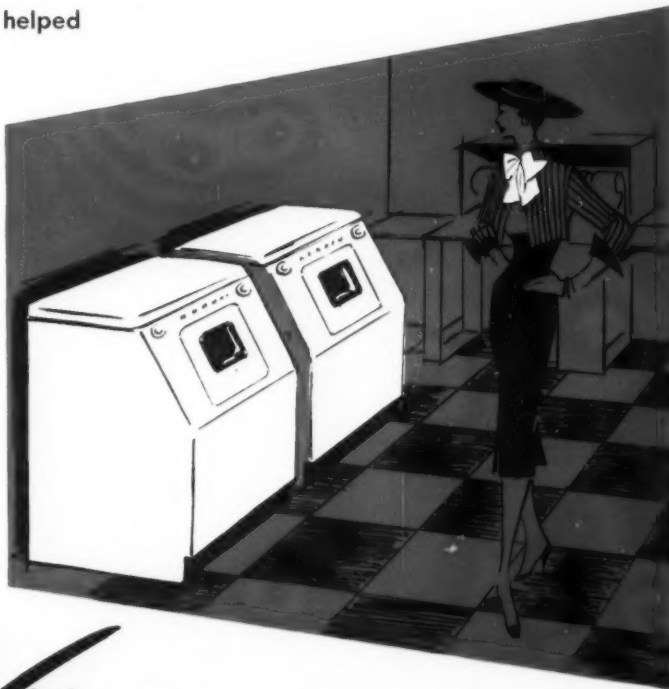
# GOOD OLD DAYS



Doing the wash in the "good old days" was really a back-breaking never-ending job. But outstanding product engineering by manufacturers of home laundry appliances has transformed this household drudgery into sheer luxury.

Through the years, since the first all steel washing machine tub was successfully enameled, Chicago Vit has contributed many major advancements in enamel composition and processing techniques . . . advancements which have helped make porcelain enamel the standard finish for top quality washers and dryers. Newly developed alkali-resisting frits for the home laundry industry are the most recent Chicago Vit contribution that is helping home laundry appliance manufacturers build more sales appeal into their products.

If you haven't yet found out how you can produce easier-to-sell home laundry appliances with Chicago Vit's new alkali-resisting frits, it will pay you to do so. Your Chicago Vit representative will gladly give you all the facts.



# Chicago Vitreous CORPORATION

1425 South 55th Court • Cicero 50, Illinois

# FOOLPROOF... a low-cost, foolproof timer for washing machines and dryers!



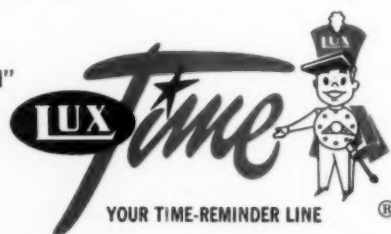
Available with 1 or 2 single-throw switches  
Range: 30-60-120-180 and 240 minutes.

Approved by Underwriters' Laboratories  
for 25 amps, 230 volts,  $\frac{1}{2}$  h.p. - A.C.

*For the full story on this foolproof, low-cost timer  
get in touch with LUX today!*



Look for the "MINUTE MINDER MAN"  
tag — it dramatizes the famous  
Lux Timer line found on  
America's finest appliances



THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT

## U. S. STEEL HOMES

### NAMES MOULTON PRES.

H. Douglass Moulton has been elected president of United States Steel Homes, Inc., it was announced today by Clifford F. Hood, president, United States Steel Corp. He succeeds Gen. J. O'Brien who has resigned.

United States Steel Homes, Inc., a wholly-owned subsidiary of United States Steel, is one of the country's large producers of prefabricated homes, and was originally known as Gunnison Homes.

## CLARY ADDS KEY MEN

### IN EXPANSION MOVE

Clary Multiplier Corp., San Gabriel, Calif., announced appointment of Elmer L. Harrison to the new combined post of tooling superintendent and master mechanic, and promotion of Robert Rosenast, chief industrial engineer, to assistant production manager for business machines and general manufacturing.

The promotions were announced by Hugh L. Clary, president, in connection with expansion plans for the company's manufacturing operations, which include adding machines, cash registers, automatic guidance instruments, electronic equipment and aircraft hardware.

## TOOL ENGINEERS PLAN

### WESTERN EXPOSITION

Floor plans for the American Society of Tool Engineers' first Western Industrial Exposition, in Los Angeles, next March, reveal that the show will be not only the first of its kind but probably also the West's biggest industrial exposition.

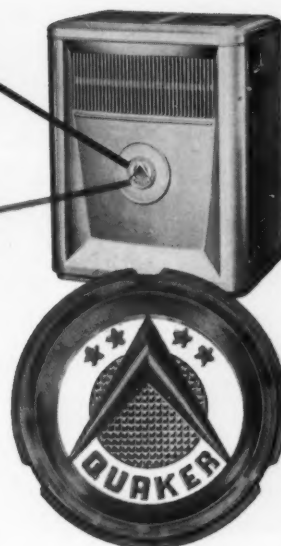
The floor plans reveal that 80,000 square feet of actual exhibit space has been made available to manufacturers of tools, machines, industrial supplies, processes and equipment in four adjoining exhibit areas of the Los Angeles Shrine Auditorium and Shrine Exposition Hall. This is believed to be a record amount of space for any coast industrial show, according to Harry E. Conrad, ASTE executive secretary.

finish SEPTEMBER • 1954

Functional window  
withstands intense heat

Decorative nameplate  
adds eye appeal

## ...One Piece of Lancaster Glass



The clear center of this Lancaster glass medallion allows instant flame check. Yet the intense heat can't damage the piece, because a special heat-resistant glass is used. As a decorative nameplate, the medallion gives Quaker heaters increased eye appeal. And that means greater sales appeal. The outer ring is baked-on gold. The recessed name and stars and the raised "V" are sparkling fired-in ceramic colors.

Lancaster glass can help make your appliance more attractive, more functional—and more saleable. Lancaster glass can help you cut costs, too. For the complete story of Lancaster service to the appliance industry—including design assistance without obligation—send the details on your glass part problem today.

the appliance industry calls on Lancaster for these glass parts

- dials
- "clip-on" indicators
- escutcheons
- butter dishes
- nameplates
- juicer and mixer bowls
- laundry-equipment windows



the Lancaster Lens co.

Lancaster, Ohio

☐ The details on our glass part problem are attached. What solution can you suggest?

☐ Please send me literature covering Lancaster service to the appliance industry.

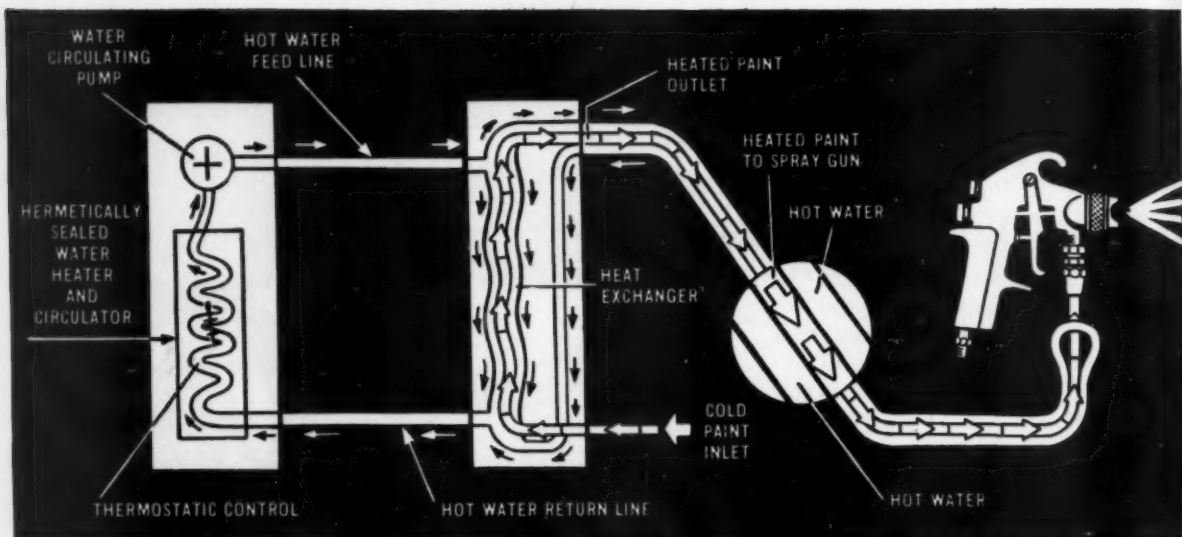
Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

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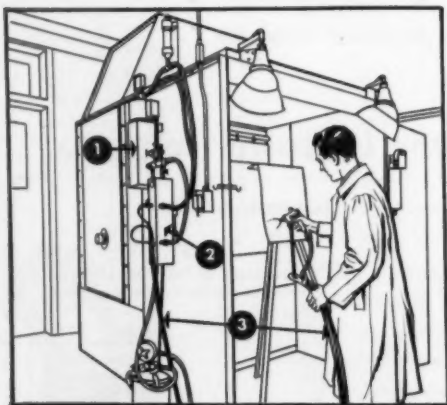




New DeVilbiss Paint Heater has three basic components: 1. Master Heater, 2. Heat Exchanger, 3. Heat Jacketed Hose Assembly.



New DeVilbiss Paint Heater offers you these advantages: no clogging, no overheating, no churning of paint, no variable fluid pressures. Adapts easily to multiple colors and spray stations. Safe, and easy to clean. Low in price. Your nearest DeVilbiss branch office can give you full details.



1. Water is heated and circulated by Master Heater. 2. Hot water heats paint in Heat Exchanger. 3. Paint is kept hot right up to the spray gun. Hot water circulates through supply-and-return passages in unique heat jacket surrounding hose.

## From DeVilbiss . . . a fast, foolproof paint heater!

The new DeVilbiss Paint Heater gives you precision temperature and viscosity control! Paint can't char — there's no heater paint pump to wear out!

Now! DeVilbiss brings you a paint heater that's fast and foolproof . . . lets you take full advantage of the hot-spray method without paint overheating and constant maintenance.

Paint is heated to exact temperatures, almost instantly, in a revolutionary Heat Exchanger. Kept hot, too — right up to the gun — with an exclusive heat jacketed hose assembly . . . even with extended hose lengths.

If you'd like to enjoy the benefits of hot spraying — better finishes with fewer coats, less paint loss from overspray, no worries about variable room and paint temperatures which affect material viscosity — get complete details about the new DeVilbiss Paint Heater.

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# Recent trends in coatings formulation

## Part II — improvements in established types of synthetic resin paints

by *William von Fisher* • HEAD, DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING  
and *Edward G. Bobalek* • ASSOCIATE PROFESSOR OF CHEMISTRY, CASE INSTITUTE  
OF TECHNOLOGY, CLEVELAND, OHIO.

IS progress in the use of synthetic resins for coatings continuing to gain momentum, or is it actually slowing down because already all the easy things have been done? This question can be answered by both a "yes" and a "no". If one measures progress by the rate at which new materials are proposed, it seems as though advances of the last two years have been negligible as compared to what was indicated in the 1952 *finish* report for the period of 1946 to 52. However, advances in formulation that come about through more effective use of established raw materials can be just as important as the discovery of new resins. This viewpoint will be explained in greater detail in this part of this report.

It was noted in Part I that the past 25-year record of progress gave us at least 25 families of synthetic paint binders during that period which marks the rapid rise of an organic chemicals and plastics industry in the United States. This glut of new materials upset the stable oil and varnish tradition of paint formulation.

The formulators seized upon these developments enthusiastically, and tried them all. Sometimes the results were successful — sometimes a failure. But so many things new were coming along all the time, that the formulator was in effect "walking along a cafeteria counter." If an item fitted his plans easily, it was adopted. If difficulties arose, there hardly seemed to be time, nor did it seem to be worth the effort to stop and solve them, since something entirely

new always seemed around the horizon which might be easier and better to use. As a result, the new formulation art in terms of synthetic resins expanded very broadly, in terms of available materials, but to relatively little depth with respect to knowledge of any particular material.

The recent slow-down in development of new resin types has had the effect of encouraging critical examination of formulation practices that hitherto were skipped over in too much haste. The advances in depth of understanding which came from a more critical study and a better understanding of fundamental resin

and colloid chemistry will be reviewed here under the title of "improvements." Some of these advances are clearly marginal. Others are sufficiently outstanding to be classed as discoveries equal or greater in importance than was the original development of the new resins themselves. To continue our parallelism with the old report, let's look at Table 3 reprinted from the 1952 report which classifies resin systems as they are used in production finishes.

### Finishes containing alkyd resins

A point was made in the 1952 report that production finishes, in

Table 3\*

### Synthetic Resins for Industrial Finishes

Class I — Systems Containing Alkyd Resins	Class II — Systems Containing No Drying Oil or Alkyd
A. Alkyd Resins, oil-modified	2. Curing (or thermosetting) types
1. oxidizing (air-drying types)	1. phenoplasts
2. non-oxidizing types	2. epichlorohydrin resins
B. Resin Mixtures containing alkyds	3. allyl and other polyester resins
1. Two-component mixtures	4. silicone resins
a. alkyds plus phenoplasts	5. aminoplasts
b. alkyds plus aminoplasts	
c. alkyds plus nitrocellulose	B. Non-curing (or thermoplastic) types
d. alkyds plus chlorinated rubber	1. resins derived from cellulose
2. Three-component mixtures	2. synthetic and natural rubber types
a. alkyds plus epichlorohydrin resin plus aminoplasts	3. vinyl resin types
b. alkyds plus vinyl resins plus aminoplasts	4. silicone resins
C. Alkyds modified by chemical reaction with other resins	5. nylon
1. styrenated alkyds	
2. silicone alkyds	

\*Reprinted from May 1952 *finish*.

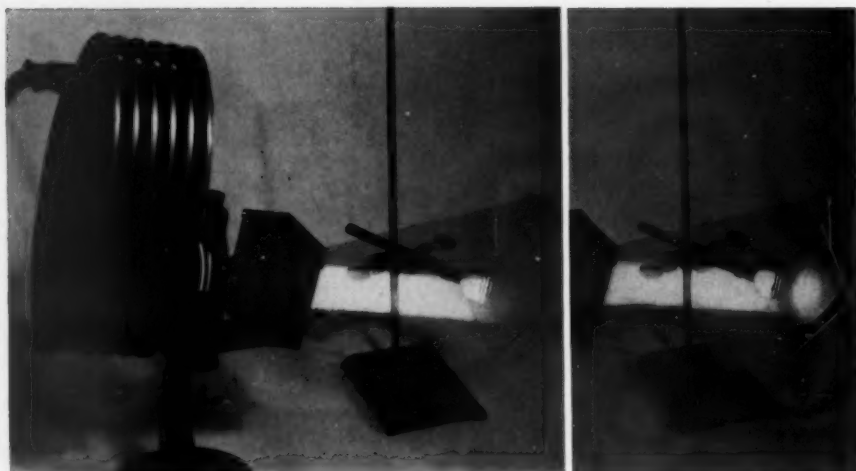


Figure 3 — Examination of two lacquer films (containing resin mixtures) on gloss panels under 45 degree illumination with a strong light beam. The less compatible film scatters light more intensely (white spot) than does the film wherein the resins are more compatible. Film flexibility and durability are superior for lacquers in which the resins are more compatible. This simple procedure of observation can be an important tool for the formulator when applied to a variety of mixed resin systems.

PHOTOS COURTESY HERCULES POWDER CO.

general, can be divided into two classes: (A) where protection is all important, and decorative properties are limited, and (B) where decorative properties and artistic acceptance of the finish are all important, and to maintain such some sacrifice is tolerated with respect to the ultimate in durability and metal protection. This difference in viewpoint has become broader. Our most protective finishes are still unacceptable for many production items because they lack luster or versatility in color formulation. For Class B, where decoration is paramount, a considerable and continuous effort has been made to upgrade durability and protective properties, both through use of better undercoats, and also through improvements in the finish coat.

Since alkyd resins still carry the burden of establishing an optimum compromise between decorative properties and durability, considerable effort has been made in research on improved alkyds. However, alkyd resins are seldom the sole binder, and alkyd development must complement research on those other resins commonly used in mixtures with alkyds. (See Table 3) How all of this dissimilar research can have any point of unity is at first difficult to see, but nevertheless such a common viewpoint seems to exist.

#### Science of resin mixtures

The coordinating issue is the problem of compatibility of mixed

resin systems. Compatibility is difficult to define specifically, although the very term has connotations that are broad and easily understood. In thermoplastic resin systems, such as alkyd/nitrocellulose or alkyd/chlorinated rubber, the mixed resin components must remain as far as possible in homogeneous solution in each other throughout the lifetime of the dry film. If this prevails, then the blend will function like a single component resin system. That is, the film will have a high luster, clarity, and will be uniform through its entire depth with respect to chemical composition and physical properties such as hardness, elongation, thermal expansion coefficient. All parts of the film will have the same sensitivity to water adsorption and other exposure variables. Such homogeneous films tend to fail by erosion or chalking, rather than by cracking, checking, spalling, or flaking. If, however, aging the film causes one of the resins to cure, or if loss of plasticizer reduces the intersolubility of the resins, then luster drops off and mechanical failure of the film is greatly accelerated by a mechanism other than erosion.

The problem of compatibility can be minimized by reducing the molecular weight of either the alkyd or the bleeding resin or both. This however is only a limited remedy, because at lower molecular weights both physical properties and chemical resistance become inferior. Hence, if we want to improve mixed resin films, we must try to get greater

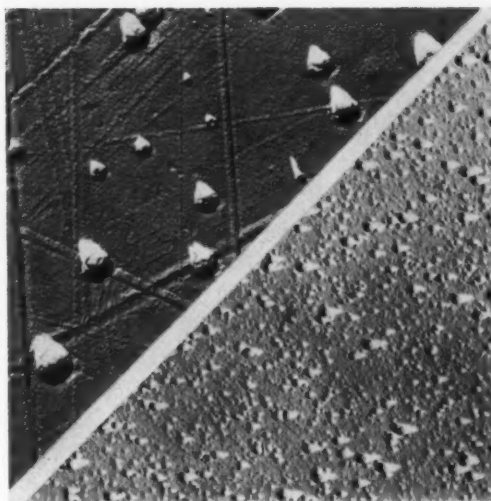
compatibility, and greater permanence of compatibility at sufficiently high molecular weights to assure other desirable film properties. This is no small problem. Since alkyd resins are the most flexible with respect to variation of their properties, the tendency has been to hold the other than alkyd resin component constant and to vary the alkyd. This requires no fundamental new knowledge of alkyd chemistry. Established materials and processing techniques are used more efficiently in better combinations. For example, vacuum techniques, low temperature processing, choice of alternate acids and polyols, and more careful purification of oil acids and other raw materials. No single feature alone, but a variety together can produce alkyds that have enhanced compatibility at higher molecular weights with even higher molecular weight grades of the blending resin. Such improvements have definitely been felt in say furniture lacquers and to some extent in pigmented automotive types of lacquers.

How much improvement does this actually represent from the viewpoint of the paint user who is not concerned with the subtleties of the chemistry? Possibly they can be rated as only marginal in most instances. Certain problems like flaking, checking, adhesion loss, alligating, and blistering may be minimized to a considerable extent. The economic advantage of eliminating a considerable number of customer complaints is certainly not trivial.

However, sunlight and water still strike at the chemical structural units of these resins, and over-all durability in terms of basic types of failure, such as chalking of automotive lacquers, may hardly be improved at all.

In thermosetting finishes, there is not much question of solubility of resins in the finished film in the same sense as in thermoplastic lacquers. If resins cross-link or cure, then the only way they can remain truly compatible is for them to react with each other to form a new resin which is a hybrid of the original two. For example, this situation prevails in the systems of Table 3 listed as mixtures with phenoplasts, epichlorohydrin, silicone resins, and others. Here the directions of search for greater compatibility are even more important, and more difficult. The earlier versions of such resins, alkyds and others, stressed the problem of solubility of the resin mixtures in the paint can and during the solvent evaporation phase of film formation. The easiest way to accomplish this was to keep the molecular weight low and to compensate for this by

Figure 4 — Electron microscope view (10000X) of surface of same thermosetting paint film dried under conditions of high and low humidity. The greater the extent of chemical reaction required to cure a film, the more sensitive is the paint to damage by adverse curing conditions. The blisters are smaller but far more numerous in the lower micrograph (high humidity condition.)



making one or both of the resin types highly reactive.

Hence, in contrast with the situation for thermoplastic systems, the greater part of the chemistry of molecular weight increase that occurs during resin manufacture was accomplished during the baking of the paint film rather than in the resin kettle where the resin manufacture was started. Comparatively speaking, the greatest part of the resin manufacture,

since it was coincident with painting, was in poorest control. The end results in terms of the final film properties can be very variable — how random can be judged, for example, by frequent sampling of panels from a production line of what is intended to be a soap-resistant white enamel of high gloss. With respect to gloss and chemical resistance most panels run a good average, a few are poor. However, what is more significant is the infrequent occurrence of a test panel that is far above the average. This suggests the average performance is far from the ultimate even for the composition used.

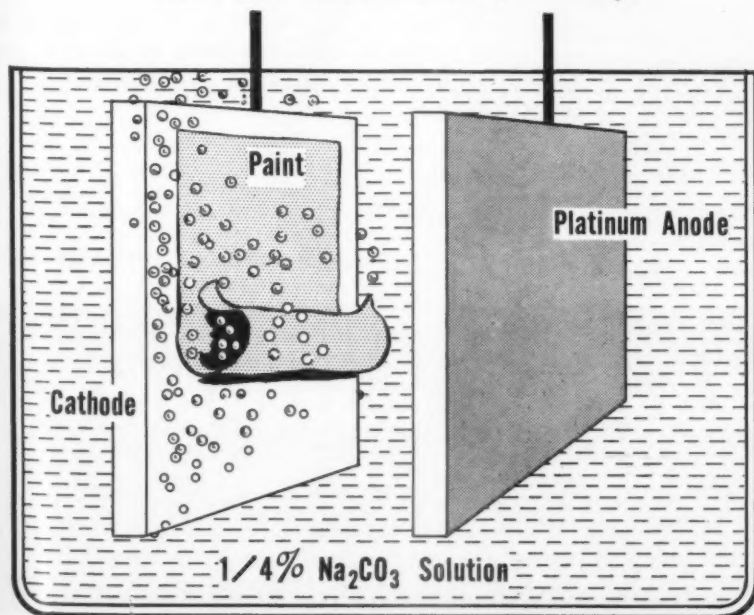
For any particular type of system, it's probable that we can effect great improvements by putting more of the resin synthesis back in the resin kettle where it is in better control, and depending less on the more erratic conditions of the chemical reaction in the curing paint film. This viewpoint would minimize several film defects, easily demonstrable with an electron microscope, such as micro-blistering, crawling, porosity and others that arise from the circumstance that a curing paint film is splitting out a great deal of volatiles during film formation.

The remedy is to redesign the chemistry of alkyds and other resins to get solution stability and application properties at higher molecular weight, so that when a film is laid down, less chemical reaction is needed during baking to bring the

to Page 102 →

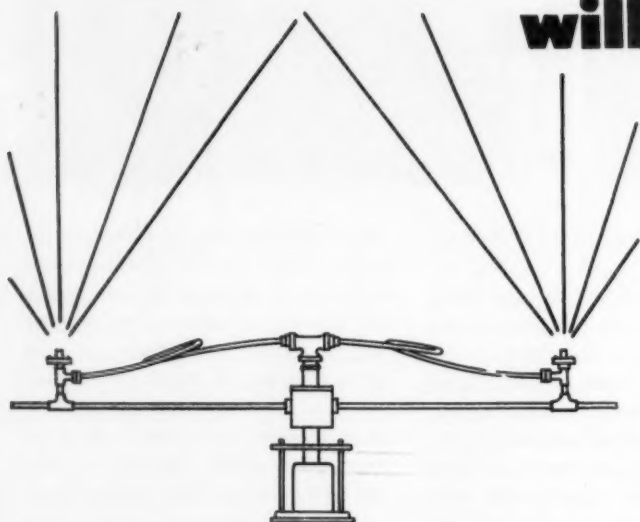
Figure 5 — Free paint films can be recovered from tinplate or other metals by electrolytic stripping. Tests of free films, as well as of paints on the original metal, helps to distinguish whether failure to protect is due to mechanical deficiencies rather than poor chemical resistance of the plastic.

D.C. Power source 35-40 V., 1-2 Amp.





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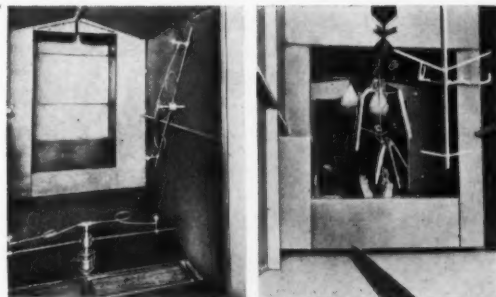
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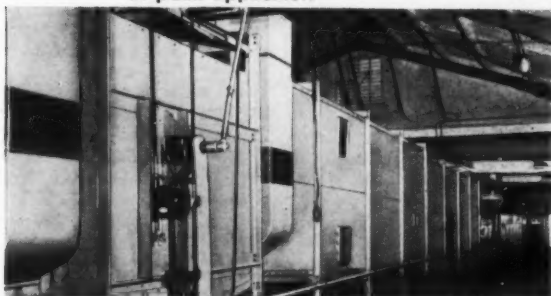
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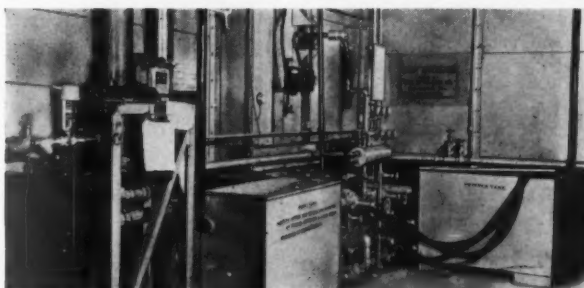
OKLET



Above left: Looking from drain chamber into flooding chamber. Above right: Work entering flood chamber of paint applicator.



Side View of flood chamber and drain chamber sections of a complete Spra-Con Paint Applicator.



Control system and material tanks for the Spra-Con Rotary Arm Paint Applicator. System requires only part of one operator's time.

## CASE HISTORY FROM A PRODUCTION INSTALLATION

Air used	
Hand Spray .....	50,000 cu. ft. per min.
Spra-Con Automatic .....	5,000 cu. ft. per min.
SAVINGS .....	45,000 cu. ft. per min.
Replacement	
Hand Spray .....	60,000 cu. ft. per min.
Spra-Con Automatic .....	None
SAVINGS .....	60,000 cu. ft. per min.

Water Consumption	
Curtain Wall Booth .....	1,220 gal. per min.
Spra-Con Automatic .....	None
SAVINGS .....	1,220 gal. per min.
Material Loss	
Hand Spray (Paint).....	\$56,000 per year
Spra-Con Automatic (Paint & Solvent).....	15,250 per year
SAVINGS .....	\$40,750 per year

SAVINGS on electric power, steam, compressor, booth and air replacement, maintenance—  
this plant saved \$127,785 during one year's operation.

## Recent trends in coatings formulation

(Continued from Page 99)

film to specification film properties. Actually, these new film formers may be slower curing than before, but the eventually formed film is more reproducible, more continuous and homogeneous, and more durable with respect to appearance and chemical resistance. Here the directions of alkyd research are similar to what we already discussed for the thermoplastic lacquer systems, but the greater burden is placed on the co-resin, such as urea or triazine types. The developments here are just beginning and are represented by rela-

tively few commercially available materials. However, the preliminary results are encouraging and serve to demonstrate that we can get improved results through a better knowledge of established types of resins, such as the aminoplasts, even though we make no important qualitative changes in our binder system.

### What improvements are possible

How much of an improvement can we count on from better tailoring of our resin mixture, baked enamels? If rated by time of exposure tolerance

for conditions like hot soap resistance in appliance finishes, we might realize 100-200 per cent improvement. If one is speaking of extreme conditions like strong acids or caustics, or chalking in ultraviolet light, possibly the improvement is marginal. Here again we are striking at the fundamental chemical linkages of the resins, the stability of which is not too dependent on structure or mechanical properties of the film.

This suggests a hypothesis that is very important in paint formulations; namely, film properties depend on (1) molecular size and structure, and (2) on chemical composition of the resin. Until recently, only the latter feature was exploited extensively, and much less profitably than if the structural factors had been recognized and adjusted to bring the best out of a composition.

No film can exceed the limitations imposed by its fundamental chemical composition. For example, ester linkages are saponifiable, carbon-carbon bonds are oxidizable, and their stability is not effected markedly by the fact they exist in resins. However for most particular resin compositions, the molecules can be arranged in size and shape so as to produce greatly improved films with respect to some other causes of deterioration, especially such as result from non-homogeneity of the physical properties of the film. This fact is being recognized at least implicitly and is having an important bearing on the paints being produced. These improved paints are no wonder materials with respect to everything we desire of them, but specific troublesome features can be minimized by better control of (1) physical structure as well as (2) the chemical composition of the resin.

### Practical considerations

The significance of this trend to the practical paint user is namely this:

1. From the viewpoint of chemical deterioration of the resinous film itself (namely, erosion failure), there is not much to be hoped for in improvement of mixed resin films containing alkyds. For that matter, this fundamental information is known

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Jensen Infrared Lamp Ovens are built to specification for baking, drying, pre-heating, and curing. Write for details.



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for nearly all binders. Improvements in resistance of resins to chemical deterioration comes largely from invention of new compositions; however,

2. It is a fact clearly demonstrated by experience that most practical paints have not performed as if chemical resistance was the major limitations on their durability. Films deteriorated due to mechanical failure long before they failed because of chemical erosion. Most of the recent researches in resin and paint formulation have tried to eliminate these mechanical deficiencies through a better knowledge of physics and chemistry of mixed resins.

The two issues should not be confused. For example, if in practical tests some paints were evaluated about three years ago, then these old evaluations may have caused a rejection and prejudice regarding some classes of resin finishes. It is well to repeat and reconsider such tests at intervals of every 2-3 years. Was the original failure due to a fundamental chemical weakness, or was it due to poor physical properties of the films? For example, free films of certain alkyd-epoxy-melamine can suffer several hundred hours in dilute caustic without serious weight loss. If tests rejected paints of this class for reasons of peeling on steel during 40 hours in caustic, then there is reason to hope that modern modifications may have cured the physical or mechanical weaknesses, and that this type of system is now good enough so that we need not look for new compositions to solve the problem.

There is much to be said for the increasingly more popular practice of evaluating free plastic films in comparison with practical finishes, since this helps discriminate between the importance of the two causes of failure.

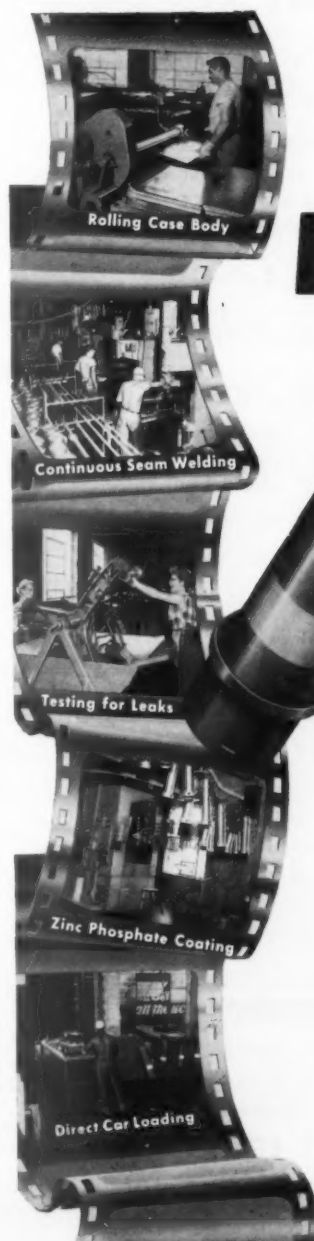
#### Systems containing no drying oil or alkyd

Here we strike at the problem of intrinsic, not apparent, chemical resistance by eliminating in as far as possible (1) saponifiable ester linkages, (2) oxidizable hydrocarbon. These resins strive primarily for

chemical and high temperature resistance. Most, although not all, resins of this class are rather poor decorative finishes. While much of what was said regarding general principles of formulation in the alkyd containing group applies here also, nevertheless, each of these resins has certain peculiarities that deserve special comment and will be considered in the concluding part of this report.

#### DICKSON BUYS EARLY FOUNDRY

Dickson City Mfg. Co. has acquired Early Foundry Co., Dickson City, Pa. It is reported that the new facilities will permit not only continued production of Dickson ranges and parts, but will embrace contract work for grey iron castings, enameling, heat treated castings, sandblasting, and sheet metal work.



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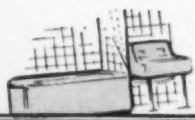
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# NEWS

## JESKE HEADS OPERATIONS FOR FLORENCE STOVE

Harold H. Jeske has been appointed vice president in charge of operations for the Florence Stove Co., Kankakee, Ill., it was announced by John P. Wright, chairman.

Jeske formerly served as vice president and director of manufacturing for Gruen Watch, and previously served in executive capacities with both Hotpoint and Maytag. In 1953, he was sent to Europe by the U.S. Department of Defense to conduct a survey of "classified defense work."

## TRANTER CHIEF ENGINEER

O. S. McGuffey has been named chief engineer for Tranter Mfg., Inc., Lansing, Mich., James R. Tranter, president, announced. He will direct all engineering activities for both refrigeration and heat transfer products.

## RUTH RICHTER JOINS FINISH

*finish* is pleased to announce the addition to its staff of Ruth W. Richter. Miss Richter has had seven years' experience in secretarial, editorial, production and list work which serves as a fine background for service to our publication readers and customers.

As a graduate of the University of Michigan, one of Ruth Richter's early editorial assignments was that of assistant editor of a house magazine published by Bendix Aviation Corporation. Later she was assistant to the editor of *Better Enameling*, a

magazine sponsored by Chicago Vitreous Corporation for plant men in the metal products field. After that, she was secretary to the manager of public relations at Hotpoint Co., where she dealt with top level management and editorial people throughout the country. Her duties included specialized creative writing.

Just prior to joining *finish*, she was executive secretary and sales coordinator with the George R. Bryant Co., a mailing list broker with offices in Chicago, New York and Los Angeles.

Miss Richter started with Dana Chase Publications on July 15 as executive assistant and secretary to the Editor.

## CORNELL AND MIT STUDENTS WIN WELDING AWARDS

An article on "Underwater Metallic Arc Welding", by O. P. Eberlein and R. C. Waugh has been selected by the American Welding Society as the best student paper on welding to appear

## PRESSED METAL INSTITUTE ANNUAL MEETING, SEPT. 4-9

The annual meeting of the Pressed Metal Institute will be held at Manoir Richelieu, Murray Bay, Canada, September 4-9. PMI's headquarters suite during the meeting will be in the Mt. Royal Hotel, Montreal.

An important phase of the meeting will be a general business session of "Merchandising Stampings." There will be discussions on "Product Planning for Business Expansion," "Mar-

ket Trends and Markets as They Are Today," "Expanded Fields of Markets," "Sales Clinchers," "Turning the Tide into More Direct Business," and "Planned Production."

The business program will also include a presentation of what British stampers have accomplished since their tour of U.S. plants in 1949.

Also featured will be the presentation of PMI's "merit certificates" and

in an undergraduate publication during the year ending June 1, 1954. The authors of the paper will split a cash award of \$200. *The Cornell Engineer*, which published the article in their May, 1954 issue, will also receive \$200.

A second prize of \$100 goes to Richard Hayes, of Massachusetts Institute of Technology, for his article "Recent Ship Failure Studies." The article appeared in the March 1954 issue of *Tech Engineering News*, and that student magazine will receive \$100 for publishing the prize winning entry.

This annual award, directed by the American Welding Society is sponsored by A. F. Davis, vice president and secretary of Lincoln Electric Cleveland, Ohio, to encourage and stimulate interest in welding.

In addition to the cash awards which will be presented immediately, certificates will be awarded to the winners during the AWS annual meeting in Chicago, November 1-5.

## LARGEST ISSUE

Again we can say — This issue of *finish* carries a greater number of pages (both editorial and advertising) than any preceding issue of its ten and three fourths years of growth. But we hope that it shall never be said that the measure of success for our editorial efforts is in the number of pages. We would like it to be measured in the value of our service to readers, which can best be judged by the verbal and written comments to our editors.—Eds.



the first "annual safety awards."

The social program includes a cruise up the Saguenay, described as "the world's greatest waterway"

#### **FLOYD-WELLS NAMES WEILL GENERAL SALES MANAGER**

W. Frank Fisher, vice president and general manager of The Floyd-



S. W. WEILL

Wells Co., a division of John Wood Co., Royersford, Pa., has announced

the appointment of S. W. Weill as general sales manager.

Weill had been associated with Geo. D. Roper Corp. as eastern manager. He has authored a number of manuals in the interest of sales training as well as conducting sales training programs. Weill will assume responsibility for the sales and distribution of Bengal ranges.

#### **NORGE REPORTS 50% SALES INCREASE IN FIRST HALF**

Home appliance sales of the Norge Division of Borg-Warner Corp., Chicago, increased more than 50% in the first half of 1954 over the comparable period last year, it was reported by Judson S. Sayre, division president.

Automatic washer sales rose 115%, gas and electric dryers 317%, refrigerators 40%, electric water heaters 15%, and electric ranges 25%; freezer, gas range, and conventional washer sales declined.

Sayre attributed the over-all increase to several factors, including the introduction of new products and

a strengthened distribution organization.

#### **WESTINGHOUSE NAMES HEAT PUMP PRODUCT MANAGER**

Milton S. Angier has been appointed product manager of heat pumps for the air conditioning division of Westinghouse Electric Corp., it was announced by Harry E. Seim, vice president.

He will make his home and headquarters at Staunton, Va., upon the completion there of the division's new plant, currently under construction.

#### **LONG TO PRESENT MATTIELLO LECTURE AT PAINT, VARNISH PRODUCTION CLUBS MEETING**

Dr. J. S. Long, educational director of Devco & Reynolds Co., Louisville,



DR. JAMES S. LONG

will present the Joseph J. Mattiello Lecture at the annual meeting of the Federation of Paint and Varnish Production Clubs, to be held at the Palmer House, Chicago, November 18-20.

Long has been active in work with both the educational and research committees of the Federation. In 1943, he conceived the idea of a coordinated program for the Federation on the subject of "Film Formation—Film Properties—and Film Deterioration." This was adopted, and the experimental work of this program is now complete and is expected to be published in the Federation's "Official Digest" this year.

**Hotpoint clothes washer and dryer** — are two of three major home appliances selected by the Society of Industrial Designers for exhibit at the international Triennale Fair, Milan, Italy. The two laundry appliances being inspected by R. C. Sandin (left) Hotpoint manager of visual design, and B. E. Schroeder, manager of home laundry manufacturing, Chicago, will be part of exhibit containing 50 examples of United States products, ranging from kitchen equipment to power tools and cars.



### BELL & GOSSETT NAMES LOCKHART VICE PRES.

Earl J. Gossett, chairman, Bell & Gossett Co., Morton Grove, Ill., has announced the election of H. A. Lockhart as vice president. Lockhart will also continue as chief engineer.

### TOASTMASTER TO DISPLAY PRODUCTS IN TRAILER

The Toastmaster Products Division of McGraw Electric Co., Elgin, Ill., has designed and equipped an auto trailer unit to display the division's line of commercial toasters and other equipment used by restaurants.

### WHIRLPOOL EARNINGS UP SHARPLY IN FIRST HALF

In a report to Whirlpool Corporation shareholders, Elisha Gray, president, reported that net earnings in the first half of 1954 totalled \$4,035,176, compared to \$2,447,310 for the first six months of 1953. Net income rose from \$77,523,838 to \$85,204,210 for the same period.

### WESTINGHOUSE NET INCOME UP 27% IN FIRST HALF

All-time record sales in the first half of 1954 increased the net income of Westinghouse Electric Corp. 27% over the first six months of 1953, according to Gwilym A. Price, president.

New sales billed at \$811,709,000 were the highest in any six months in the company's history, and were 4% higher than the first half sales of \$780,489,000 in 1953.

### CORY EARNINGS UP 23% FOR FIRST SIX MONTHS

J. W. Alsdorf, president of Cory Corp., Chicago, reported a 23% increase in earnings for the first six months for Cory and its subsidiaries, manufacturers of Cory, Fresh'n-Aire and Nicro appliances and Autopoint mechanical pencils and advertising specialties.

Though sales declined approximately 6%, to \$8,470,633, the net income was up 23% over the corresponding period a year ago, as income after provision for Federal and Canadian income taxes was higher this year.

### BALDERSTON, CARMINE TO NEW PHILCO POSTS

William Balderston, president of Philco Corporation, Philadelphia, has been elected chairman of the board, succeeding James T. Buckley who declined reelection, thus ending 42 years' service with the company.

James H. Carmine, executive vice president, was elected president.

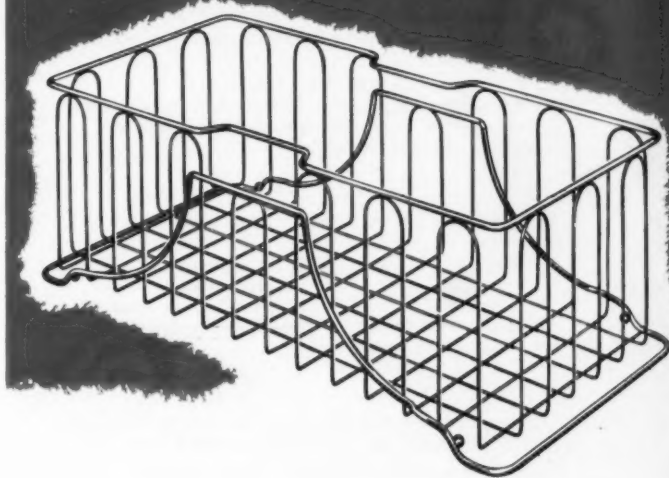
### PACKARD TO MOVE CAR ASSEMBLY TO NEW PLANT

Final car assembly operations at Packard Motor Car Co. will be moved into a new modern single-story plant this fall in Detroit. The company began to produce car bodies in this plant in July as it returned to body-crafting for the first time since 1941.

Ray P. Powers, vice president of operations, announced that Neill S. Brown has been named manufacturing manager of the car division.

finish SEPTEMBER • 1954

# HAVING A WAY WITH WIRE!



HAVING A WAY WITH WIRE is a special talent with *Peerless*. Fabricating to specifications and drawings is one problem. Constructing to specifications economically is another.

*Peerless* products are quality products. There is no compromise where quality is a factor . . . yet production knowledge consistently assures highest quality at lowest possible prices.

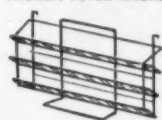
It's here at *Peerless* where you should investigate when wire formed products are a factor in your engineering and costs. *Peerless* can do it better, faster, at less cost.

Send us your prints for quotations by return mail

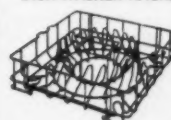
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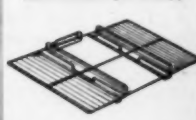
FROZEN JUICE RACKS

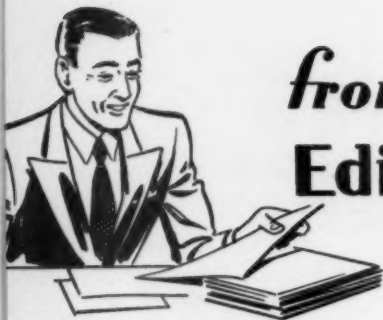


DISH-WASHER RACKS



REFRIGERATOR TRAYS





## from the Editor's Mail

I read *finish* magazine even when I don't have time to go through all of the other magazines that I receive.

● **Clark R. Strayer**  
Supt. of Research & Development  
Globe American Corporation

You have a fine magazine. It is tops in its field.

● **E. M. Higley**  
Superintendent  
Clyde Porcelain Steel Div.  
Whirlpool Corporation

Am most interested in continuing to receive *finish* because this business magazine has been very helpful to us in keeping abreast of improvements.

● **John M. Foxx**  
President  
Selvex Corporation

I enjoy your splendid publication, and take it home with me so I can absorb its contents. Keep it coming.

● **Jesse E. Josey**  
Sales Manager  
Gem Refrigerator Co., Inc.

I find your magazine very interesting and helpful in both porcelain and paint finishing.

● **Ed Yarbrough**  
Finishing Supt.  
Dixie Products, Inc.

I enjoy receiving your *finish* publication from which one can obtain valuable ideas both from the articles and the ads. I congratulate you for the high grade magazine you publish.

● **Anthony S. Majer**  
Methods Engineer  
A. B. Dick & Company

Your pictures in *finish* magazine tell excellent stories.

● **J. B. Roman**  
Works Engineer  
Westinghouse Electric Corp.

It has been a pleasure to receive *finish* magazine. It is highly interesting and one of the most informative magazines I receive.

● **F. T. Herron**  
Vice President  
Herron Stove & Foundry Co., Inc.

We would like to express our appreciation for your service to us. The *finish* magazine gets a great deal of use in our library.

● **D. B. Burke**  
Engineering Librarian  
Consolidated Vultee Aircraft Corp.

I enjoy reading your magazine. You have an excellent publication.

● **E. L. Bath**  
Purchasing Agent  
Norge Division  
Borg-Warner Corporation

Have enjoyed tremendously every issue of your magazine. I have received and read every issue since you first went to press. I enjoy very much your plant articles and the newsy reports of what's going on in the industry.

● **William Dean Nicol**  
Superintendent of Enameling  
Crown Stove Works

Good coverage of the appliance and metal products manufacturing fields.

● **Robert K. Laird**  
Engineer  
American-Standard



# ANNIVERSARY 1915-1954

Your articles on "Safe Transit" have been of particular interest to me, and we look forward to reduced in-transit damage through such education. "Keep 'em rolling but safely."

Walter M. Jones, Jr.  
Traffic Manager  
Southern Steel & Stove Co.

Wish to express my sincere appreciation for receiving *finish* monthly. I have found it to be most interesting.

J. H. Baker  
Chief Inspector  
Midwest Manufacturing Co.  
Division of Admiral Corporation

As plant engineer I have found interesting reading matter in your magazine.

J. R. Hughes  
Plant Engineer  
S. G. Adams Company

In our line of products, *finish* is very helpful. The information contained is keeping us abreast of all the latest data.

Mal Olsen  
Secretary  
Ben-Hur Manufacturing Co.

We regard *finish* as the leading publication within the industry which best serves our needs. We have always taken this stand even from its very inception. That's why we advertised in it the very first issue, and that's why we continue to advertise in this publication as we have every month for the past ten years.

You have made this publication the important paper that it is through sound, objective, impartial reporting. *finish* is as welcome to its readers as an old friend.

Herbert Turk  
Executive Vice President  
Pemco Corporation

Your magazine is one of the few very informative magazines that I receive.

J. H. MacLeod  
Industrial Sales Manager  
Telechron Department  
General Electric Company

Your magazine is a very fine trade book, and we appreciate the chance to read all of the information it contains.

Arthur S. Crane  
Assembly Supervisor  
Clary Multiplier Corp.

You have an excellent publication in *finish*.

J. F. Donnelly  
Vice President  
Servel, Inc.

Your publication *finish* is one magazine that we read regularly.

S. J. Gravelle  
Production Manager  
Marquette Appliances, Inc.

Your publication is very helpful in keeping us up to date on many processes, and is much appreciated.

J. A. Biggers  
Chief Engineer  
Ed Friedrich, Inc.

Finest publication of its kind. It is tailor made to our business (steel office furniture fabrication).

A. H. Kappenberger  
Purchasing Agent  
Peerless Steel Equipment Co.

These represent only a few of hundreds of comments from *finish* readers which we gratefully acknowledge. Others will be published as space permits.

# finish

## moves FORWARD

IN CIRCULATION

EDITORIAL SERVICE

ADVERTISING REVENUE

### finish . . . the only trade magazine

offering a complete editorial service to the Appliance and Fabricated Metal Products Manufacturing field . . .

#### . . . moves forward in circulation

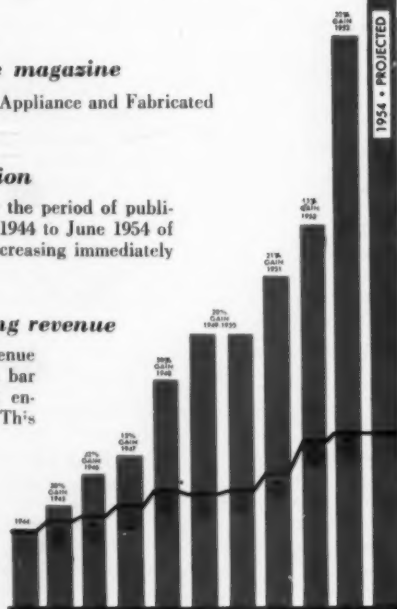
Circulation growth has been constant over the period of publication with a total increase from January 1944 to June 1954 of 111%. *finish* offers blanket circulation, increasing immediately with industrial expansion.

#### . . . moves forward in advertising revenue

The steady grow of *finish* advertising revenue accelerated during 1953, as shown by this bar chart. Advertising has been sold almost entirely on the strength of editorial content. This trend is continuing in 1954.

The red bars and percentage figures above the bars show the trend of advertising revenue in *finish*, with 1954 projected from 7 months' figures.

The black lines and percentage figures below the lines show the trend of advertising revenue in business publications. Source: *Industrial Marketing*, August, 1953.



#### . . . moves forward in editorial service

As *finish* has grown, new editorial services have been added, providing, since January 1949, a complete editorial service "from raw metal to finished product."

Write for Media File and Market Statistics

THE MAGAZINE OF  
*Appliance* AND  
Metal Products MANUFACTURING

Dana Chase PUBLICATIONS

Elmhurst Nat'l Bank Bldg., York St. at Park Ave., Elmhurst, Illinois • TErrace 4-5280, 4-5281

### SCOTT HEADS BORG-WARNER BUSINESS DEVELOPMENT

Appointment of Philip W. Scott as director of business development for Borg-Warner Corp. was announced by Roy C. Ingersoll, president. The newly-created position on the company's central office staff, in Chicago, is directed to the planning and development of business diversification.

In his new post, Scott will be a member of the firm's research policy and planning committee. Prior to joining Borg-Warner he had been vice president, secretary and treasurer of Affiliated Gas Equipment, Inc., Cleveland.

### WESTINGHOUSE MAN HEADS ELECTRICAL ENGINEERS GROUP

A. C. Monteith was elected president of the American Institute of



A. C. MONTEITH

Electrical Engineers at the AIEE annual summer meeting recently held in Los Angeles. He is vice president in charge of engineering and research for Westinghouse Electric Corp.

### CHRISTENSEN TO APPLIANCE POST AT MONTGOMERY WARD

John W. Christensen, formerly with Hamilton Manufacturing Co., has joined Montgomery Ward & Co. as manager of the major electrical appliance department. He succeeds B. M. Barrett who left the firm after 15 years of service.

## NEMA UPS MILLER, WICKS

Joseph F. Miller has been appointed assistant managing director of the National Electrical Manufacturers Association, J. H. Jewell, NEMA president, announced. Norman Wicks has been appointed manager of the Business Development Department, succeeding O. C. Small, who will become department consultant.

## SORENSEN ELECTED HEAD OF MOTOR PRODUCTS

L. J. Sorensen, who had held the top positions in Deepfreeze Appliance



L. J. SORESEN

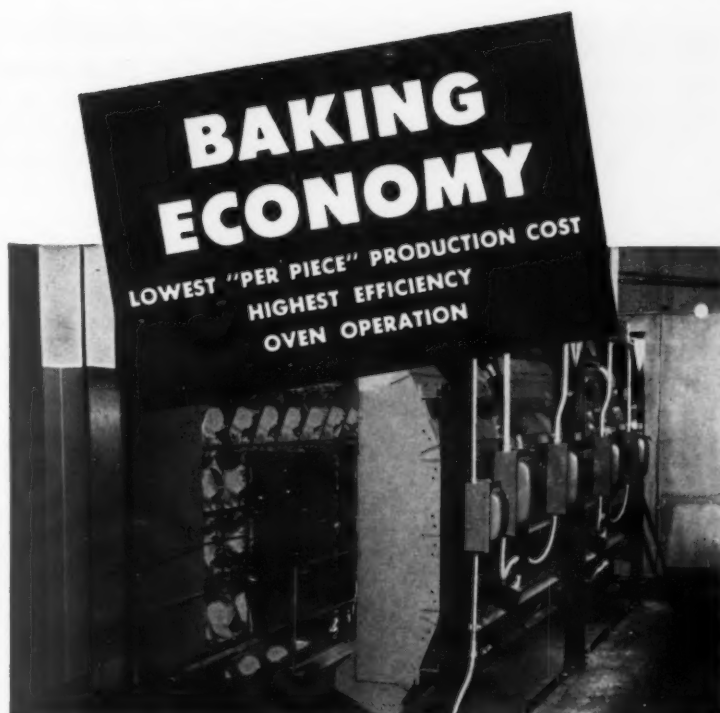
Division of Motor Products Corp. from 1950 until late in 1953, was elected president of the parent company. Since December, he had been successively executive vice president of Motor Products and acting president following the resignation of L. G. Jacques last spring.

Sorensen joined Motor Products in 1947 as treasurer and controller. During the time he was top executive of the appliance division in North Chicago, Ill., he was directly concerned with the expansion of manufacturing facilities at Lake Bluff, Ill., where a new plant was built for the manufacture of both refrigerators and home freezers.

## AVCO ADVANCES CASCINO TO MARKETING DIRECTOR

A. E. Cascino, formerly director of market research, has been advanced to the newly-created post of director

finish SEPTEMBER • 1954



Pictured above is Fostoria oven at J. D. Street Co., St. Louis. Various color finishes are baked on steel drums at the rate of one per minute. Operating cost is only 48c per hour at 1c K.W.H. Oven space only 75 sq. ft. More durable finishes with time, space, and cost savings have resulted from this reasonable cost oven investment.

## Profit WITH MODERN FOSTORIA OVENS

### ALL THESE ADVANTAGES

- Faster Cycles**  
Fastest heat transfer. Greatest output to input. Instant action.
- Less Space**  
Most production for oven size. May be ceiling mounted.
- Clean Operation**  
No by-products of combustion. No condensation.
- Uniform Bake**  
Evenray heat distribution with thorough penetration.
- Flexibility**  
Adaptable to any material, any shape, any color. Infinitely variable heat levels.
- Safety Controlled**  
No warm-up, no shut-off lag. Instant heat control.
- Less Maintenance**  
Lowest source replacement cost. Least efficiency loss.
- Highest Efficiency**  
Less than 2% energy loss. Heats product — not oven walls.
- Cuts Costs**  
Lowest "per piece" production cost. Competitive initial cost.
- Reliability**  
Foremost engineering "know-how" and service.

New improved methods are sweeping American industry — higher efficiency equipment to meet today's vital need for cost saving. For baking and drying operations, plants by the thousands have converted to profit-building Fostoria Ovens. The production advantages are amazing — the investment cost insignificant compared to savings in production time, space, man-hours. Here, today, is "push-button" heat automatically controlled, wide in versatility, unequalled in speed and efficiency of energy output to input, PLUS highest quality results. We invite your request for full information and the expert analysis of your operation needs by a Fostoria field engineer.



### SEND FOR COMPLETE FACTS

Write for this brochure of technical facts and case histories of many Fostoria oven installations. Tell us your particular problem and we will include data directly applicable to your operation.

THE FOSTORIA PRESSED STEEL CORP.  
FOSTORIA, OHIO, DEPT. F

Please send information on ovens for

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_





of marketing for the Crosley and Bendix Home Appliances Divisions of Avco Mfg. Corp.

In establishing the new post, Parker H. Ericksen, Avco vice president and general manager of appliances for the two divisions, emphasized the importance of coordinating product design, planning, pricing, sales strategy and merchandising. He said Cascino's new responsibilities would be to effect such coordination.

## AMERICAN KITCHENS SHIPMENTS AT 10-YEAR PEAK IN JULY

American Kitchens Division, Avco Mfg. Corp., reported that shipments of sinks, base and wall cabinets set a 10-year peak during the month of July.

C. Fred Hastings, general sales manager, pointed out that this meant that shipments were greater than in any July since steel became available following World War II. He also

reported a significant sales increase over July a year ago and early months of 1954.

## JORDON BUILDING ADDITION TO NEW PLANT

Jordon Refrigerator Co., Philadelphia, announced it will construct a \$100,000 addition to its new \$1,000,000 plant. The present building was dedicated on May 22.

Frank Fogel, president, said Jordon has more than doubled its production in the new plant, but that an acute shortage of space is already being felt.

Construction of the new addition which will comprise about 12,000 square feet was begun about August 1 and will be completed by the end of October, he said. It will permit the loading of eight freight cars simultaneously instead of the current five.

The present 150,000 square feet plant is designed to permit the construction of similar additional buildings on the 20-acre plot owned by Jordon. "Our long range plans include at least three additional buildings the same size as the present one," Fogel added, "but immediate requirements call for extra storage and shipping space."

## FOREIGN MANUFACTURERS TO VISIT TEMCO PLANT

The Foreign Operations Administration of the Federal Government has disclosed that Temco, Inc., Nashville, Tenn., has been selected as one of the American plants to be visited by foreign manufacturers of heating and cooking appliances. Temco, manufacturers of gas heating equipment, will be host to the group early in the fall of this year.

The principal goals of the visit, a government official states, will be to study ways of lowering cost of appliances to consumers abroad through more efficient production and distribution practices. The visiting management personnel of European firms will study the manufacturing and distributing techniques of several American companies with the object of learning methods which they can adapt to their own operations.

Robertshaw  
MODEL F-1  
2 Circuit  
Thermostat

For **SWITCHING** HEATING CIRCUITS  
**CUTTING IN** MOTOR or BLOWER

HI-HEAT TO LOW HEAT

HEATER AND BLOWER

AGITATOR AND HEATER

The Model F-1 shown here is a single pole, double throw thermostat used to switch circuits from high to low heat where two heating elements are used. For example, an appliance may have one heating element with 4500 watt capacity and a heat holding element with 1000 watt capacity. When the thermostat calls for heat, the 4500 watt element is in action. When the desired temperature is reached, the main contacts are broken, the low heat element is cut in and the 1000 watt element will function until a drop in the temperature causes the thermostat to operate and switch contacts back to the 4500 watt element.

May be used to operate fans in air duct or agitators in tank, etc., in combination with heaters when desired. Write for Catalog.



**Robertshaw-Fulton**  
CONTROLS COMPANY

ROBERTSHAW THERMOSTAT DIVISION, YOUNGWOOD, PENNSYLVANIA

## A. O. SMITH JUDGES PUBLIC'S LIKES AND DISLIKES BEFORE DESIGNING NEW AIR CONDITIONERS

There's nothing like judging the public's likes and dislikes before you design a new product to sell to the public. And fully as important to successful merchandising is a thorough field testing program.

The Permaglas Division of A. O. Smith Corp., Kankakee, Ill., has applied these truths to the spawning of its new year-round air conditioner, initial units of which began coming off the line at the Kankakee Works in June.

Practically everything about the new air conditioner, which will serve a home up to 1600 sq. ft. and thus meet 80 per cent of the residential market, was measured in the light of public criticism of air conditioners and home heating equipment.


Much of the light was shed by evaluating a survey of dealers and builders to disclose the principal points of acceptance as well as dissatisfaction in the performance of current air conditioners, according to J. S. Robinson, manager of heating equipment sales.

Heart of the unit's heating section is the Permaglas heat exchanger, ceramic-coating inside and out to avoid the dangers of rust and corrosion.


**Westinghouse's 40th year in range business —** was celebrated this summer as the company produced its 2,000,000 electric range. As the history-making range nears the end of the production line at Mansfield, Ohio, plant, it is inspected by J. H. Ashbaugh, vice president of electric appliance division, and R. M. Beatty, manager of range department. L. B. Claypool, of production department, makes final adjustments before range is packaged.



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# Westinghouse *chooses...*



### WESTINGHOUSE

chooses a jewel  
befitting the product  
it adorns.

### COMPARE!

Does your nameplate  
do as much  
for you?



**AMERICAN EMBLEM CO.**  
1400 Joyce St. Utica 1, N. Y.

Find out how the American Emblem treatment can put your name out front. Mail today.

Return today to: American Emblem Co., Inc.  
1400 Joyce St., Utica, N. Y.

I'd like to see:

Representative ☐ Samples ☐ Catalogue ☐

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

### BORCH HEADS G-E MARKETING

General Electric Co. has announced the election of Fred J. Borch as vice president of marketing and manager of the marketing services division with headquarters in New York. Borch has been with G.E. since 1931.

### MANITOWOC NAMES HANNON GENERAL SALES MANAGER

Thomas F. Hannon has been appointed general sales manager of

Manitowoc Equipment Works, the major appliance division of The Manitowoc Company, Manitowoc, Wis. Formerly vice president and general manager of Ryan Refrigeration Co., Hannon succeeds Erle S. Brown who resigned.

Hannon, previously with the Deep-freeze and General Motors, will place emphasis upon broadening distribution of the company's own brand freezer. The fifty-two year old firm is a leading private label manufacturer.

### NORGE TO EXPAND

#### REFRIGERATOR FACILITIES

Plans to spend nearly \$500,000 on new refrigerator manufacturing facilities were announced by Norge Division of Borg-Warner Corp. The company will modernize and expand productive capacity at its Muskegon, Mich., refrigerator plant, said Judson S. Sayre, president.

The expenditure is the second major expansion program announced by Norge in recent months. Previously, the company reported a \$1,600,000 expenditure to increase range and laundry equipment production at Herrin, Ill., and Effingham, Ill., plants.

### BENDIX LABELS PORCELAIN

#### ENAMELED PRODUCTS

Bendix Home Appliances Division, Avco Mfg. Corp., has incorporated the Porcelain Enamel Institute's product label into one of its own for application to certain of their laundry appliances. The company, a pioneer in the automatic home laundry equipment field, now manufactures two "Duomatic" models, three models of automatic washers, a gas dryer and an electric dryer.

### 104 CITIES TO GET

#### MORE NATURAL GAS

A detailed picture of the projects, companies and communities involved in the multi-billion-dollar expansion program of the nation's natural gas industry is presented in the 1954 supplement to the "Natural Gas Construction Data" studies, published by the Gas Appliance Manufacturers Association.

It shows Federal Power commission approval during the past year of more than 6,000 miles of pipeline construction will bring new or additional natural gas service to 104 cities of more than 50,000 population. It also provides similar data on applications now before the FPC which will involve 10,264 more miles of pipeline.

### ABC's of stamping

→ from Page 29

Bars are usually over .203" thick, but under 6" wide. Cold rolled strips may be purchased up to 24" wide at

to cut corners on costs...



put FIBERGLAS to work!

Savings, in production costs and time, too, are the rule for manufacturers who make Fiberglas\* Insulation a part of their products. You may find substantial savings with Fiberglas at many points in the manufacturing process. For example, the drape strength of certain Fiberglas Insulations may enable you to use fewer pieces of insulation. You may save on handling and assembly costs because you can obtain Fiberglas Insulation pre-cut and pre-formed to fit your product. Savings in transportation costs are possible, too, because light-weight Fiberglas Insulations are easily

stacked and stored, cost less to ship into and out of your plant. And you save on warehousing because Fiberglas deliveries are keyed closely to your production schedule.

You can draw upon all the facilities of the Owens-Corning Fiberglas Research Laboratories to help find ways to improve your product and production methods. For a hint on the kind of help you can expect, write for the new booklet, "Sales Opportunities," available through the nearest Fiberglas office, or: Owens-Corning Fiberglas Corporation, Dept. 109-I, Toledo 1, Ohio.



\*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for products made of or with fibers of glass.



some mills, and sheets up to approx. 90" wide.

#### Edges

The edge of the material as it emerges from the rolling mill is logically called "mill edge." Such edges are usually slightly rounded, except in the case of bars, when square edges are considered necessary. The edges of material from which blanks are cut out are unimportant because they become identified with the scrap. Other edges may be cut substantially straight in squaring shears or a slitter. The latter operation pertains to a greater extent to the thinner gauges.

#### Coils or cut lengths

Sheets and strip materials may be purchased in coils of many tons in weight. Production from coil stock requires devices for uncoiling, straightening and feeding the material automatically through the die, such as *coil cradles, stock reels, roll feeds* or a gripping type of *slide feed*. Coils likewise find their greatest use in the lower half of the material range in thickness. All types of rolled material may be procured, bundled in straightened and cut lengths.

#### Analysis

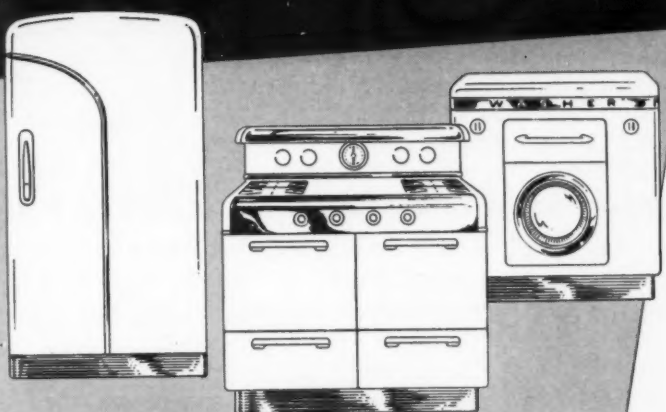
Special properties may be imparted to steel by varying the proportions of its elements and its heat treatment. Over 5,000 different alloys have been processed from a score of commonly used elements to get the maximum properties desired, such as strength, weight, heat treatability, resistance to wear and shock. *Parts that are to be cold formed should have less than .30 carbon and if cold drawn less than .20 carbon.* If carbon exceeds those limits, parts may require hot processing if the operations are severe.

#### Selection

High tensile steel finds many applications where maximum strength and minimum weight are desirable. *Stainless steel* is popular wherever resistance to corrosion and high heat is imperative. It also may be judiciously used on decorative articles. *Vitreous enameling steel* is adapted to porcelain enameled products. *Galvanized steel* is used for parts that are unprotected from the ravages of the weather.

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## a NEW LOOK at LOW COST



### STAINLESS TRIM changes product appearance...economically!

Need a design change to spark sales? Stainless trim can do the job—without major die changes! Sparkling stainless can be tailored to your exact needs—often with existing tools or slight modification. Stainless moulding blends with all color schemes—picks up and reflects surrounding colors for added accent. And, best of all, stainless will not chip or fade—remains bright *always*. Write today for your copy of Pyramid's "Plan Book of Metal Mouldings."

## Pyramid Mouldings Inc.

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NEW YORK...CALIFORNIA

### SEND FOR YOUR FREE COPY OF "PLAN BOOK OF METAL MOULDINGS"

No one connected with the design or manufacture of any appliance should be without a copy of this book containing hundreds of standard and special mouldings. Send for your free copy today.

Without obligation, please send copy of  
"Plan Book of Metal Mouldings." F-9

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

## **SPEED QUEEN ANNOUNCES**

### **KEY PERSONNEL CHANGES**

Speed Queen Corporation, Ripon, Wis., has announced the following recent changes in key personnel: J. B. Murray, formerly director of purchases, named executive vice president; R. M. Cornwall promoted to director of purchases; R. E. McDonald named assistant sales manager,

and F. D. Butler, Jr., named director of market research. R. C. Labisky, assistant to the president, has retired.

### **FEINBERG HEADS USARCO**

David E. Feinberg, formerly vice president, has been elected president of U. S. Air Conditioning Corp., with plants in Minneapolis and St. Paul, Minn.

## **Production of colors in titania opacified frits**

*(Continued from Page 52)*

duction of titania opacified colored enamels, 80% or more perfect ware can be reasonably expected in two coats, with 60 to 70% acceptable ware in one coat.

A major problem in most plants beginning color production is that the personnel relax after two or three good runs. Invariably this leads to trouble.

Some things to watch for in the production of colored products are:

1. Make sure the oxide inventory will be adequate to complete the sched-

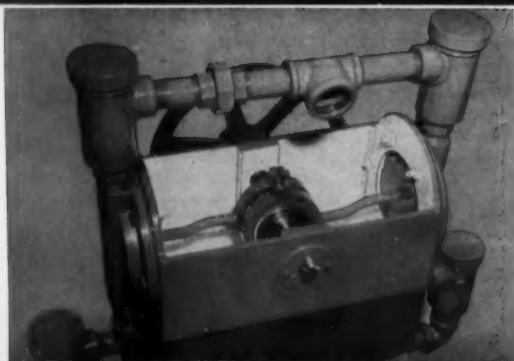
ule of colors. If the color match changes appreciably from laboratory match to production mills, recheck the oxides.

2. Check the weighing of oxides for accuracy and make sure the mill is loaded correctly. Even with experienced personnel and standard procedure, mistakes can be made. A few extra minutes taken in checking the mill may save several hours required to correct the milled color.
3. Weigh the oxides in a smooth container and add directly to the mill. Oxides will adhere to any rough surface and a small amount of oxide may change the milled color. For this reason, the best practice is not to load the oxides through the load-

ing hopper or chute, but to add them directly to the mill.

4. Load the oxides first. This will prevent an excessive amount of oxides from lodging around the mill head when the mill is started. An alternate precaution employed by some companies is to load half the frit, then the oxides and mill additions, and then the remainder of the frit. This would place the oxides in the center of the frit mass and would insure against any loss of oxide around the mill head.
5. Make sure the vent plug is in before adding the water. This may sound picayunish, but you would be surprised how easy it is to forget little things like this. It has happened — not once, but several times. An unknown amount of oxide washed out of the mill will pose a real problem in correcting the color.
6. Control the fineness of grinding within the specified limits. The fineness of the milled enamel will have a significant effect on the color. In general, coarser grinding will produce a stronger, brighter color, and finer grinding will produce a weaker color.
7. If storage tanks are used, make sure there is no oil leakage from the paddle motor. Oil contamination will produce faded spots in the color.
8. Make sure the enamel slip is thoroughly screened before spraying. Coarse frit particles will accelerate settling and produce specks in the color.

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**MAINTENANCE FREE  
VITRA-PUMP**



2 MODELS 11 G.P.M. and 28 G.P.M.

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East of the Rockies West of the Rockies

**QUINN-ROGERS MFG. CO.**

345 Burkhardt Ct., Forest Park, Illinois

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9. Check the specific gravity and set, as a uniform set will help to minimize wet or dry spray.
10. Urea will affect some colors, and for this reason it should be used when a color match is being developed if it is to be used in the production mill.
11. Make sure the agitator is in operation at all times that the enamel is being sprayed. If there is any settling, the oxides may be concentrated in the bottom of the tank. This would make the first pieces stronger in color and, as the enamel is used, the color would become progressively weaker.
12. Make sure the spray booth and hangers are thoroughly cleaned. Sweep the top of the booth as well as the sides and floor.
13. Maintain a uniform coating of enamel on the ware. Reoperations should receive a full coat (*in area, not in thickness*) to minimize any chance of color change. Make sure that any coating is completely wet out.
14. Use a different duster for white and each color to prevent contamination.
15. Don't spot colors in the bisque. Redesign the templates and brushing techniques to eliminate the need for spotting.
16. Use production pieces in your checks for color match. Small panels will not necessarily produce the same color as production pieces. Generally, a color will be slightly brighter on production pieces than on test panels.
17. Determine the proper furnace setting and chain speed to produce the desired color and maintain this fire if possible.
18. A variation in heat treatment will change the color, the change depending on the particular color and frit used. Generally, a harder fire will produce a weaker, more yellow color, and a lower fire will produce a brighter, stronger color.

All these do's and don'ts make the production of colors sound like a terrifying problem. Granted, the successful production of colors in titania opacified enamels is not easy. But stop and think what these do's and don'ts boil down to. Aren't they simply a set of rules which could be applied to any enamel shop to improve the operation and provide the controls necessary for the successful and efficient production of porcelain enamel? If this is so, then the production of colors will involve no more work or control than you should already be using for maximum efficiency.

Cleanliness, accuracy, careful procedure, and adequate control will provide your Sales Department with the colors they want and you with a feather in your cap for efficiency of operation.

finish SEPTEMBER • 1954

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**GUARANTEED!**

## ... Better results ... lower costs for your spray washing operations

Whatever your spray washing operations, you are guaranteed better results, lower costs when you call in the Detrex field technician.

The soil being removed, the type of spray washing equipment you are using and all other influencing factors are first thoroughly analyzed by the Detrex technician. This survey is made *without* disrupting your operations in any manner. Then, after

careful study, he will recommend a cleaner tailored to your needs along with specific data on the improved performance you can expect from it.

But that's not all of the story . . . Detrex service continues, on a regular basis, for as long as you use the operation! The Detrex technician visits your plant at reasonable intervals to make certain that top efficiency is maintained and that you are kept abreast of constantly improving techniques; he even assists in the training of personnel if you desire.

It all adds up to what we call "Service with a Saving" . . . one of the important values on which our business has been built.

Investigate the benefits of Detrex spray washer cleaners for your plant. An easy way to do it is to use the coupon below . . . how about doing it now.



Please send us your alkaline and emulsion cleaning file ☐. We would also like a Detrex technician to make recommendations on our cleaning operations ☐.

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 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
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**DETREX**

CORPORATION

DEPT. MW-107, BOX 501, DETROIT 32, MICH.





## Finishing at Amana

→ from Page 37

primer, and from 1 to 1.2 mils for finish. Provision is made for checking corrosion resistance on production parts through the use of humidity and salt spray tests.

### Mechanics of handling different shapes and models

The spray guns are actuated by the trip arm on the conveyor which is set in a pre-determined position by

the loading operators. Actuation is made through a switch-relay-solenoid air valve combination. To finish eight different models of freezers, six upright and two chest, it was necessary to consider three dimensions — width, length and height:

**Width:** Different width of models means a varying distance from the spray gun to the ware. To keep this distance uniform within a seven-inch limit, the guns and electrodes are mounted on movable fixtures to accommodate three classifications of width.

**Length:** This determines the interval of time that a gun is spraying and varies from 26 inches interval of conveyor time for the

side of an upright cabinet, to 60 inches for the sides of a chest cabinet.

**Height:** This determines the number of guns necessary to finish a side and varies from two guns, for a chest, to four guns for an upright cabinet.

Each conveyor hook is equipped with trip arm, mounted in a horizontal plane, perpendicular to the conveyor, with a four-position setting. Three positions can actuate switches while the fourth is an off position. In each electrostatic booth, there are three tracks mounted parallel to the conveyor in a position corresponding to the three positions of the trip arm. Switches are mounted on these tracks and can be adjusted as to position parallel to the conveyor.

Switches on track #1 will actuate the four side guns and the bottom guns to spray all the cabinet sides and tops. Switches on track #2 will actuate the four side guns for spraying the long doors or long combinations of doors and machine compartment doors. Switches on track #3 actuate the three lower side guns to spray short doors and chest cabinets. For chest cabinets, one gun is de-actuated by turning off the control air. Length of gun time is obtained by the distance the switches are set apart. A pair of switches is placed on each track for each length of gun time desired. Thus, on track #3 there is a pair of switches for a 60-inch, 40-inch and 30-inch interval.

The desired switch is actuated by the booth operator from a switch control panel so that only one pair of switches is used at one time. The width variation is handled by batching production on one of three classifications of parts grouped according to width and setting the movable electrodes and guns for these different widths. Guns and electrodes are moved rapidly and short runs of ten minutes or more of each width can be handled.

This installation would seem to be the practical answer to any questions concerning the feasibility of using the latest in modern automatic finishing equipment, where requirements are for the production of a comparatively wide variety of shapes and sizes in component parts.

Next month: Assembly operations at Amana.



## PAINT SHIPPING BOSS WITH A "3000-GALLON RESPONSIBILITY"

### ...AND A BUILT-IN CONSCIENCE TO MATCH!

That's Mearl C. Meister, Ferbert-Schorndorfer's 31-year veteran shipping supervisor.

Whether he is supervising the filling of a 5-gallon sample or checking out a 3000-gallon tank wagon, Mearl and his 25-man crew take the old-fashioned viewpoint on service . . . "do it, and it's done!" Conversely, his viewpoint on shipping methods is as up-to-date as a new F-S formula . . . the tank wagon system eliminates filling drums, gets the shipment into the big user's tank on schedule, and

at the same time diverts dock energy to hustling out F-S drumlot shipments for smaller quantity users.

There are 20 to 30-year experts all down the line to supervise the formulation, production, and delivery of F-S product finishes . . . reason enough that an equal number of 20 to 30-year veterans are included in Ferbert-Schorndorfer's growing list of customers.

Write for details on how you can put the F-S team into your plant serving your product finishing requirements.

**THE FERBERT-SCHORNDORFER COMPANY**

A DIVISION OF AMERICAN-MARIETTA COMPANY

12815 Elmwood Ave.



Cleveland 11, Ohio

SEPTEMBER • 1954 finish

## Permanent magnet...

→ from Page 31

affect on the ability of the magnetic catch to form a satisfactory closure.

If the new magnetic type catch spreads as fast as some manufacturers feel it will, it is probable that the number one reason will be in the fact that it presents a selling feature which can be used effectively by sales and advertising management in the promotion of finished products.

Another point which unquestionably has added impetus to the interest in perfecting the magnetic catch has been the nationwide publicity registered in connection with tragedies involving small children locked in refrigerators or ice boxes. It is felt by some that a magnetic closure might be the answer to the harmful publicity which has had nationwide attention.

The accompanying sketches show a few practical applications as developed by competent engineers.

Source for more engineering information on the permanent magnet catch or closure may be obtained by writing to finish.

## BRADLEY TO U. OF I. POST

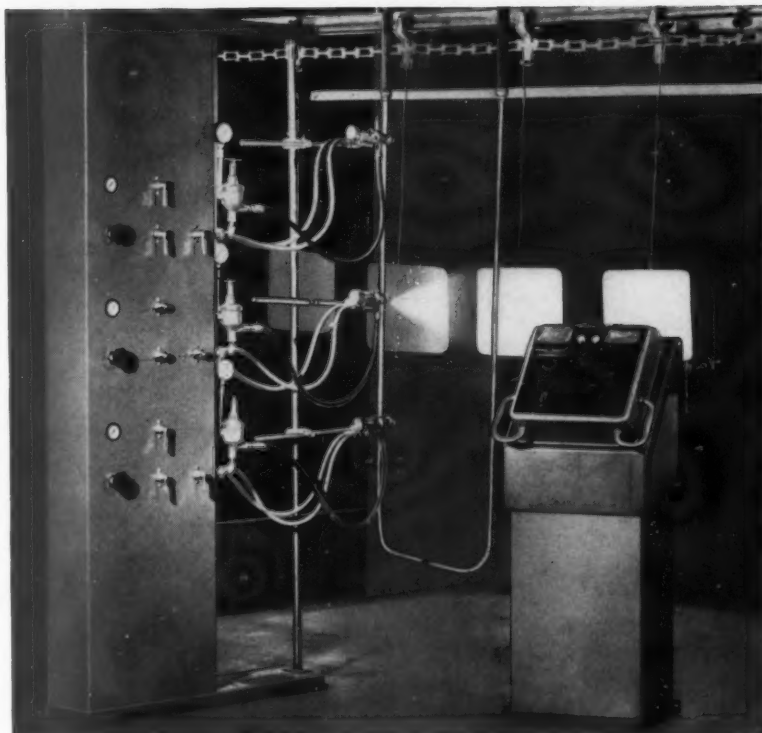
The University of Illinois has announced the appointment of Fennimore N. Bradley as research assistant in ceramic engineering.

## METAL FINISHING SUPPLIERS

### HOLD GOLF TOURNEY

At the annual golf tournament of the Metal Finishing Suppliers' Association, held July 15, during the American Electroplaters' Society convention, Gus Manganello of the White Plains Electroplating Service, White Plains, N.Y., was awarded the first prize trophy for both low gross and low net scores. Phil Ammirato, Guild Platers, Long Island City, N.Y., received a traveling bag as second prize. The third prize, a bar kit, was given to Joe Eisele, Enthone, Inc., Philadelphia. Harold Marsh, Hammond Plating Corp., Ypsilanti, Mich., won the fourth prize military set; and a golf bag, which was the fifth prize, was awarded to John Manganello, of White Plains Electroplating.

finish SEPTEMBER • 1954



## PAINTING COSTS Now Cut 35% to 70%!

**Ashdee** Electrostatic Systems have attained painting efficiencies above 95%! Save labor by automatic operation! Flexibility permits use with a wider variety of products than other systems!

Annual savings of \$385,000! Another of \$110,000! Finishing cost cut from 8.9c per unit to 1.5c! These are not exceptional cases. Phenomenal savings result from virtually every application of Ashdee advanced techniques in Electrostatic paint-spraying.

Improvements introduced by Ashdee include up to 100% automatic operation, 100% adaptability to any metal ware, from freezer cabinets to candlesticks—at fastest practical speeds—with utmost economies of intermittent-spraying, skip-spraying, with "instant" model-to-model or parts changes!

Ashdee Electrostatic Systems, owned and operated by a great many nationally known plants, have produced results beyond expectation! Not one failure has been reported!



## Ashdee ENGINEERING SERVICE

Analyzes Your Finishing Problem—Compiles Evidence of Savings—  
Designs a System Adapted to Your Operation

With your permission, your product is test-run in the Ashdee Electrostatic laboratories... in your presence, if you wish... with no obligation, of course. You will see a consistent, fine quality finish—at a higher production rate—

and at startling, potential savings. Then you can determine within how many months, or even weeks, your own Ashdee Electrostatic System will pay for itself.

Write today. You'll be glad you did

# Ashdee ELECTROSTATIC PAINTING SYSTEMS

ASHDEE ELECTROSTATIC PRODUCTS, INC.

DIXIE HIGHWAY, HOMEWOOD, ILL. TEL.: HOMEWOOD 1814; (CHICAGO) WATERFALL 8-1561

## NEWS ABOUT SUPPLIERS

### DRAKE MFG. NAMES SMITH

#### DIRECTOR OF SALES

Drake Manufacturing Co., Chicago, manufacturers of socket and light assemblies for appliances, has announced the appointment of Verne E. Smith as director of sales. He will have charge of all matters pertaining to the distribution of Drake products.

### DEVILBISS SPRAY FINISHING

#### SCHOOL SETS COURSE DATES

The DeVilbiss Co., Toledo, Ohio, has announced the following dates for courses in instruction in industrial spray finishing: September 13, October 11, November 8, and December 6.

### SHANDS JOINS HOMMEL

#### AS MIDWEST MANAGER

Ernest M. Hommel, president of The O. Hommel Co., Pittsburgh, announced the appointment of Everett H. Shands as midwest district manager of porcelain enamel frit sales and service, with headquarters in Chicago.

Shands has been associated with the ceramic industry for the past twenty-two years. He was formerly connected with Detroit Vapor Stove Co. and the Geo. D. Roper Corp. He was director of engineering and development at Roper.

### ESSAK STEEL NAMES OHIO

#### SALES REPRESENTATIVE

Essak Steel & Chemical Co., Chicago, has named R. W. Kress & Co., Cleveland, as sales representative for the northern half of the state of Ohio. "This appointment is in line with our current policy of widening our distribution in various industrial areas," stated Henry Essak, president.

### FERRO NAMES HOFSTETTER

#### TO NEW POSITION

William N. Noble, vice president in charge of the porcelain enamel frit and glaze division, Ferro Corporation, Cleveland, Ohio, announced the appointment of G. W. (Jerry) Hofstetter as division manager.

Well known in the ceramic finishing field, Hofstetter takes over this post after ten years as manager of Ferro's midwest sales division. He will make his headquarters in Cleveland.

### ARMCO TO INSTALL ROLLING

#### FACILITIES IN BALTIMORE

Armco Steel Corp. has begun work on a \$5½ million project to install new rolling facilities at its Baltimore Works. W. W. Sebald, president, said the project will consist of a bar mill especially designed to roll stainless steel in a wide variety of sizes and grades.

**At Binks spray finishing school** — William Beacham, school director, is shown explaining the theory of spray finishing to a class in the firm's Chicago plant. The next classes will be held September 13-17, October 4-8, November 8-12, December 6-10.



EVERETT H. SHANDS G. W. HOFSTETTER

### CHICAGO INDUSTRIAL SALES OFFICE FOR WOOD CONVERSION

Wood Conversion Co., St. Paul, has established an industrial products sales office in Chicago under the direction of A. J. Werlein.

### CLARKE NAMED MANAGER

#### OF NEW PENNSALT PLANT

Robert W. Clarke has been named manager of the new Delaware, Ohio, plant of Pennsylvania Salt Mfg. Co., it was announced by Albert H. Clem, president of Pennsalt's chemical specialties division. Ground for the new plant was broken on June 17.

### FOOTE LITHIUM AWARD PROGRAM

To stimulate and reward research in the use of lithium in ceramic engineering field, Foote Mineral Co., Philadelphia, is sponsoring its second "Lithium Award Program."

A total of \$2000 in cash prizes will be awarded to authors of the best papers describing unpublished development work. Closing date for entries is November 1, and all papers must be submitted by July 1, 1955.

### MYERS TO FERROD MFG.

C. D. Clawson, president of Ferrod Mfg. Co., Batavia, Ill., a subsidiary of Ferro Corp., has announced the appointment of Merritt F. Myers as plant manager, succeeding Fred Ewald who was named director of central research development for the electrical companies in the Chicago area. Ewald retains his title of vice president, and will continue as a Ferrod board member.

Prior to joining Ferrod, Myers had been associated for 11 years with Magic Chef, Inc., where his last position was that of director of production planning.



*September • 1954*

# safe transit

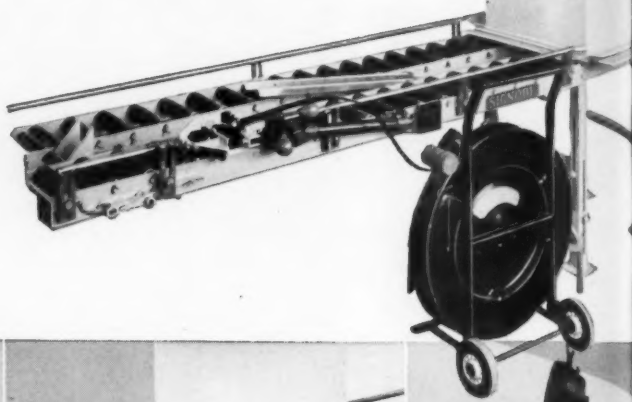
**FROM ASSEMBLY LINE TO FINAL CUSTOMER**

SIGNODE SETS THE STANDARDS

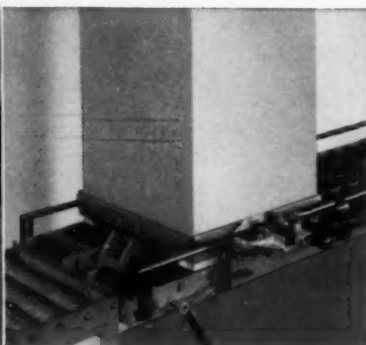
# NOW! Interlocking Flange Containers Held...Strapped...at 2 a minute!

**NEW SIGNODE CONVEYORIZED STRAPPING STATION . . .** designed to make packaging in interlocking cartons an integral part of economical, fast-moving production line operations.

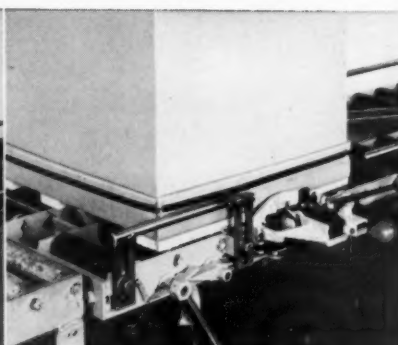
Manufacturers of appliances and many other products who install this Signode equipment can expect to package for shipment as many as 120 containers per hour per strapping station!



Process begins. Operators fold side flanges, push container between flange-holding guides.



Strap, draped around bottom cap, is held in correct strapping position by flange guides.

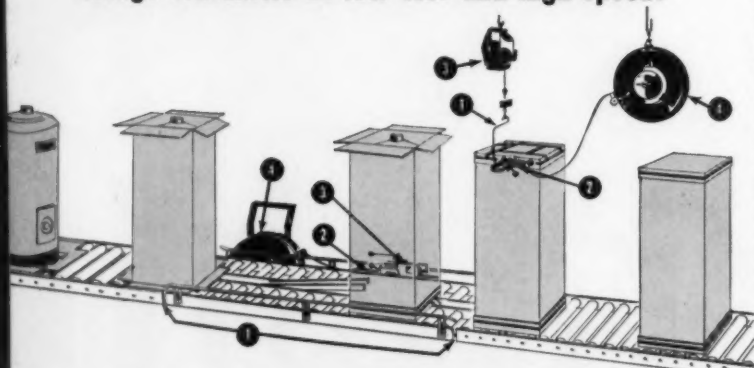


Strapping has been tensioned and sealed around bottom cap. Operator depresses spring-positioned tool to disengage tool and front stop.



Top cap is folded and held in a simple jig. Strapping tool, from spring balancer, tensions draped strap.

**Here's all you need for strapping interlocking flange containers at low cost and high speed!**



For strapping bottom cap: 1. S-105 Conveyor Section — with stops. 2. TM-2 Tool Mount (conveyor mounted). 3. AHC-1220 Strapping Machine. 4. DF-9 Strapping Dispenser.

For strapping top cap: 1. Suspension Hook Tool Mount. 2. AHC-1220 Strapping Machine. 3. Tool Balancer (capacity — 10 to 20 lb.). 4. DO-4 Overhead Reel with Ceiling Bracket.

**VERSATILE . . . Signode Conveyorized Strapping Station handles containers of various lengths without adjustment**

Signode conveyorized strapping stations let you hold and strap top and bottom caps at production speeds—thus breaking the bottleneck that formerly restricted the use of interlocking flange containers. No adjustment for length of container is necessary. Adjustment to the width required by the production run is easily made.

The savings in strapping time, strap used, man power handling time alone will quickly pay for these surprisingly profitable, low-cost conveyorized strapping installations.

**Get the eye-opening facts about the savings that can be made by installing Signode conveyorized strapping stations. Write Signode today!**

SIGNODE

**SIGNODE STEEL STRAPPING COMPANY**

## safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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#### 162 CERTIFIED SAFE

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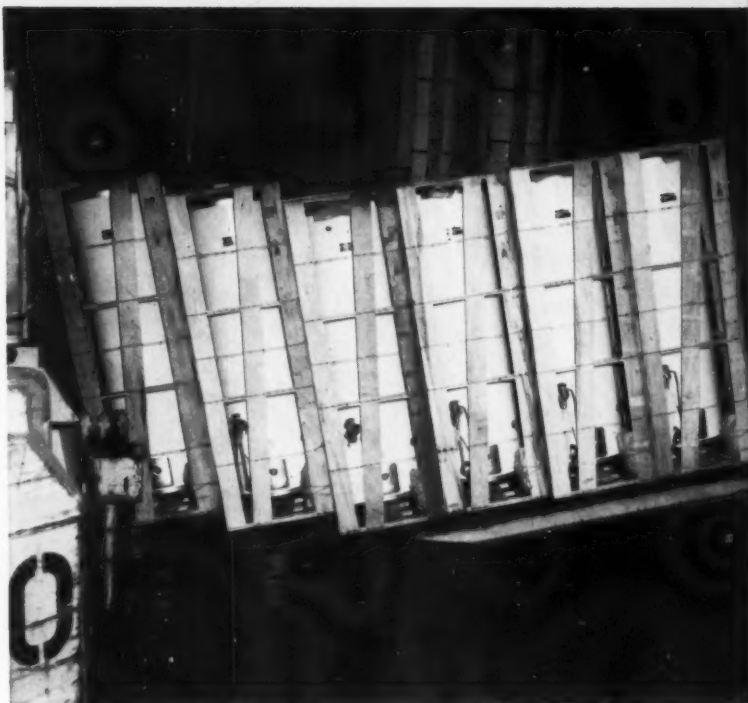
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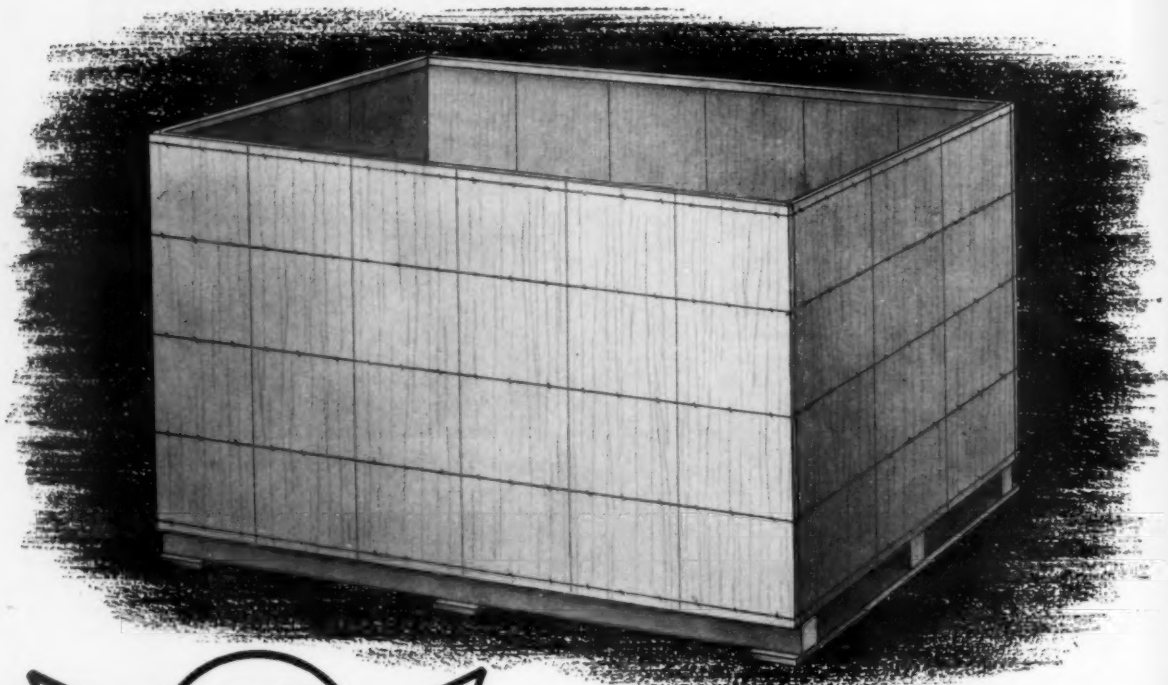
**Unique "roller conveyor trailer"** — is used to carry crated water heaters from assembly line to storage at the Bastian-Morley plant. For unloading (shown here), the front end is uncoupled from the industrial truck, and the conveyor platform is tilted to permit the crated units to roll onto the floor. The trailer is easily pulled out from beneath the units still on its platform floor. Twelve units comprise this load, the back row being hidden from view. (For story on packaging at Bastian-Morley, see Page ST-5)

**Automatic packaging equipment** — has been installed at Maytag's Plant 1, Newton, Iowa. Shown looking over one of the first units to pass through the new package sealing equipment are, left to right, Russ Simons and Kenny Mills, both of factory engineering; Tom Staubus, superintendent of Plant 1 assembly; and Dykes Spilman, foreman over the new installation.





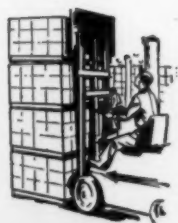
# *A Multi-Purpose Box That Answers Materials Handling Problems...*



## WIREBOUND PALLET BOX



The versatility of wirebound containers is well exemplified in the SUPERSTRONG Wirebound Pallet Box. You can use it on the production line ...for interplant transportation of parts...as a storage bin...as a shipping container which may be easily knocked down and returned for reuse.



SUPERSTRONG Wirebound Pallet Boxes are light in weight, sturdily constructed—and offer an economical answer to materials handling cost problems. They are engineer designed and built to your individual requirements.

We would appreciate an opportunity to study your problems and offer our suggestions.



**RATHBORNE, HAIR and RIDGWAY BOX CO.**  
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Proper crating plus careful carloading results in safe shipment of "Faucet-Hot" and "Arrow-Line" gas and electric water heaters. Most cars are shipped under orders for partial unloading at various points enroute, an operation that demands good packaging and careful carloading. Bastian-Morley officials report that shipping damage is non-existent under normal shipping conditions.



## Crating water heaters at Bastian-Morley

describing how a finished product can be packaged for shipment in 45 seconds

**S**EVENTY-FIVE different sizes and models of gas and electric water heaters pour into the packing area from the assembly lines at Bastian-Morley Co., Inc., LaPorte, Ind., and are packed for shipment quickly and easily without hesitation or confusion.

The heaters scarcely slow down in the packing area between assembly and storage, even though they reach packers in no pre-determined order as to size or model.

R. E. Reynolds, chief engineer, and John Vitale, who is in direct charge of packing-for-shipment, explained

that this smooth flow through an operation that sometimes is hectic has been achieved by coordinating production schedules and packing-for-shipment preparations.

The packing has been further eased and speeded by using crates in 21 different sizes, some being suitable for

more than one model or size of water heaters. Actual tests have proved that a Bastian-Morley heater can be packed in 45 seconds!

Heaters are assembled on the bases of their crates. Thus, when a unit reaches the packing area, it is prepared speedily for shipment simply by putting the top of the crate in position on the unit and folding and placing in position the one-piece wire-bound wrap-around blank that forms the four sides of the crate, and closing the crate with wire-loop fasteners.

Crate blanks of various sizes and in sufficient numbers are stacked in relatively small floor space convenient to the packers in accordance with the current production schedule. Thus, as units of various sizes reach the packing area in indiscriminate succession, the proper size mats are always on hand.

#### Devise unique handling vehicle

The units barely stop in the packing area as they are wrapped in their crates and addresses are stencilled. They move steadily and smoothly to the end of the line, where they are transferred to an unique material handling vehicle perfected by Reynolds and Vitale — a tiltable steel framework with a roller conveyor floor, a pair of rubber-tired wheels

*Ample supplies of crate blanks (center foreground) to meet the day's production schedule are stacked close to packing crews so that completed units pass from assembly to storage with hardly any hesitation.*



half-way between the ends, and skid supports and a coupling at one end for attaching to an industrial power truck (see Page ST-3).

The crated heaters are rolled from the floor-level roller conveyor in the packing area directly onto the roller conveyor floor of the vehicle. When it is fully loaded, the floor of the vehicle is levelled and it is hooked to a truck that tows it to the storage or shipping area. There, the trailer is unloaded simply by uncoupling it

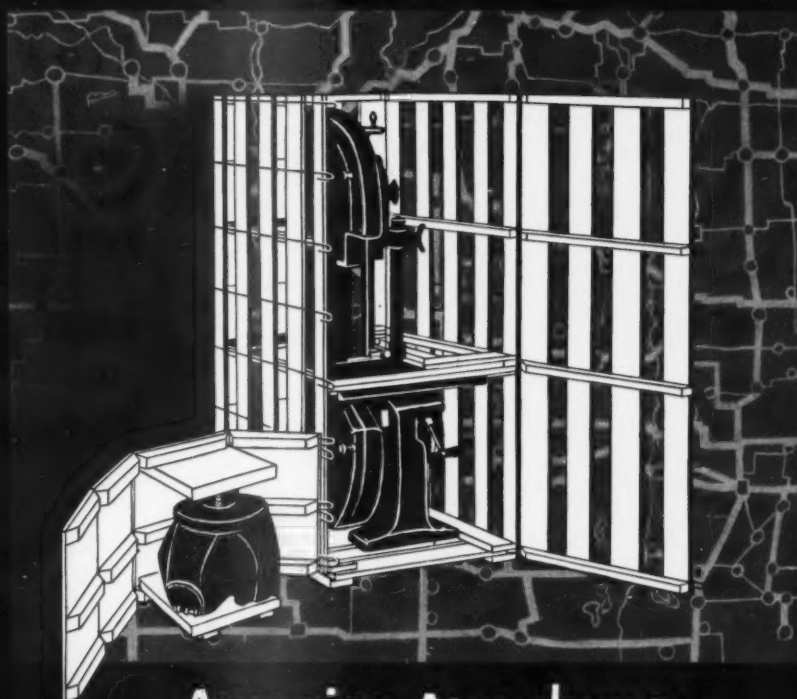
from the truck and tilting the back end downwards to the floor so that the units roll smoothly off as the trailer is pulled away.

Reynolds and Vitale agreed that shipping damage due to container failure under ordinary circumstances virtually has been eliminated. Tare weight has been saved by eliminating special interior packing through the use of metal cups pre-attached to the crate bases to hold the units snugly in position.



*Quick and easy stacking and handling is provided by industrial power trucks fitted with finger attachments. Crated units are carried from place to place, shifted when needed, and lifted and lowered in stacking easily and quickly in storage and for shipment.*





Any size, Any shape  
No matter where it's bound  
**SHIP IT WIREBOUND!**



There is practically no limit to what you can ship in a Wirebound . . . for Wirebound is a *most versatile container*. Wirebounds combine the strength of steel wire with the resiliency of wood in limitless combinations. For example, look at the rock bit box on the left. This small, rugged Wirebound eliminated previous stacking failure and in-transit damage losses. So did the Wirebound band saw crate on the right. For greater safety and greater savings, investigate Wirebounds . . . today!

**MAIL THIS COUPON NOW!**

**Wirebound**  
**BOXES & CRATES**



**WIREBOUND BOX MANUFACTURERS ASSOCIATION**

Room 1154, 327 South LaSalle Street, Chicago, Illinois

- ☐ Have a sales engineer give me the whole story  
☐ Send me a copy of "What to Expect from Wirebounds"

Name \_\_\_\_\_

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

City, Zone and State \_\_\_\_\_

## York Ice Maker is going places



**READY TO USE.** The minute this York Ice Maker comes off the production line it is ready to use. But to reach its destination as perfect as it left the last inspector, a shipping case as good as the unit must be designed. The York Corporation put the problem in the hands of experts — Atlas Plywood's Shipping Container Clinic.



**READY TO TRAVEL.** Although it goes low-rate freight, the ice maker will "ride Pullman" so far as comfort and safety are concerned. The Clinic recommended bolted-to-the-back fastening, a light-but-strong plywood sheathing enclosing all parts against weather. A package bonus over less modern types is room on all sides for trademark and instruction stencils.

## Can your shipping costs be cut?

Let's try. No charge if they can't. Big savings if they can. Ship us your products in their present containers. Then —

We'll test them, duplicating all conditions of actual transit. You'll get a full engineering report, along with the clinic's recommendation for any improvement in packaging that may be needed. And you're welcome to watch the tests.

This is a FREE service by Atlas Plywood. Without obligating you in any

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way it enables you to find out: (1) whether or not you can get a *safer* shipping container; (2) whether you actually *can* cut your present shipping costs, and; (3) just *how much* you can save.

Your Atlas Plywood representative (see Classified Telephone Directory) will be glad to make the arrangements. Or write to Atlas Plywood Corporation, 1432 Statler Building, Boston 16, Mass.

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CORPORATION  
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ST-8

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# What happens to your product in transit

conclusion of a summary of test data compiled by the Technical Planning Division of the National Safe Transit Committee

THE first part of this report by the Technical Planning Division of the National Safe Transit Committee included a detailed summary of scientific data upon which is based testing procedures of the National Safe Transit Program.

It told how individual carriers and the major carrier associations (Air Cargo, Inc., American Trucking Associations, Inc., Association of American Railroads, and Railway Express) cooperated with the NST Technical Planning Division in conducting thousands of miles of test shipments to secure average conditions encountered. The test shipments were a

part of regular out-going shipments involving transit handling conditions, both at the origin and destination of the shipment along with that encountered in transit.

This concluding part of the report includes charts showing a summary of averages for test shipments for all modes of transportation.

### Summary

1. These test shipments point out that under normal conditions the most severe shocks, regardless of carrier employed, occur during handling.
2. Regardless of carrier employed, 5th zone shocks are encountered. This

establishes 5th zone shocks as a minimum requirement for the PACKAGED PRODUCT to withstand in order to arrive at its destination in a satisfactory condition.

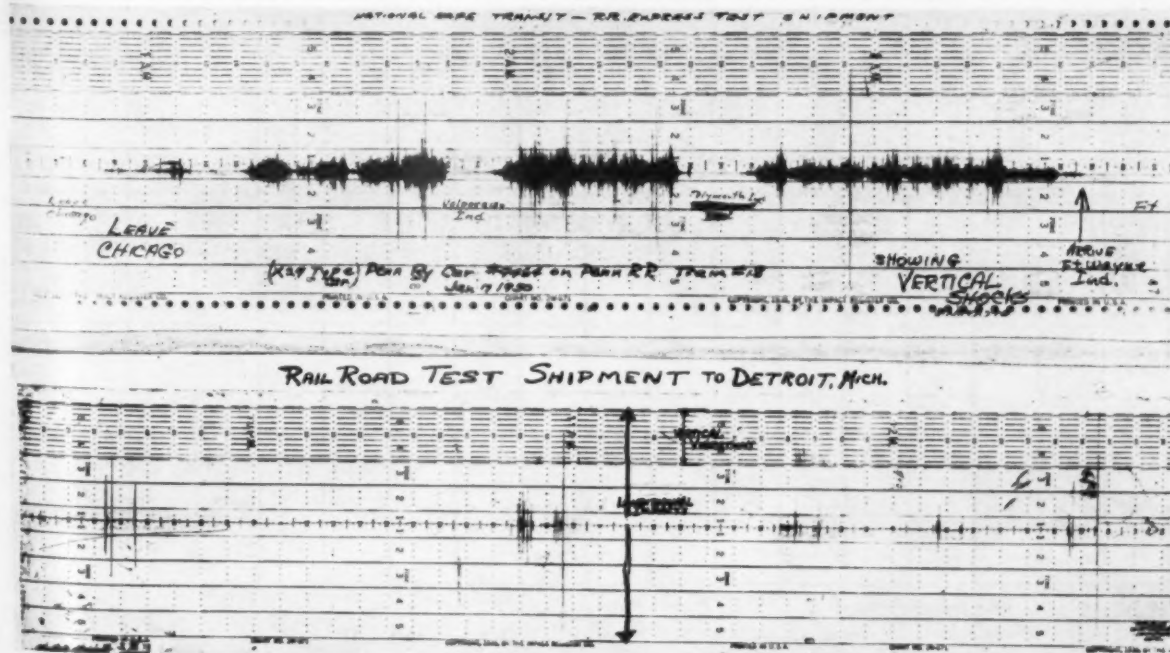
3. Data obtained is the scientific basis for the National Safe Transit testing procedures.

4. It also provides accurate correlation for the National Safe Transit tests set forth under "Pre-Shipment Testing of Basic Carload Shipments".

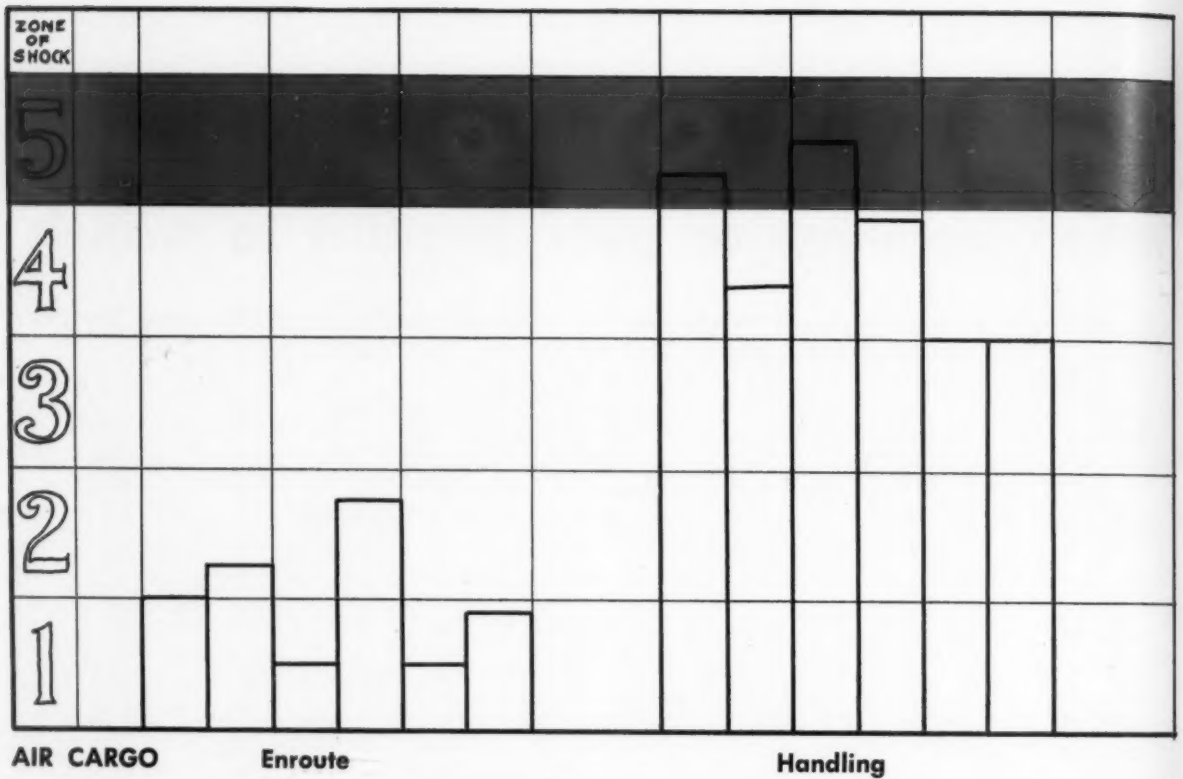
5. Data on test shipments clearly shows that all National Safe Transit tests faithfully reproduce the conditions normally encountered during transportation and handling. →

Top: A tape recording of shocks encountered in a Safe Transit test shipment, via Railway Express, between Chicago, Ill., and Ft. Wayne, Ind.

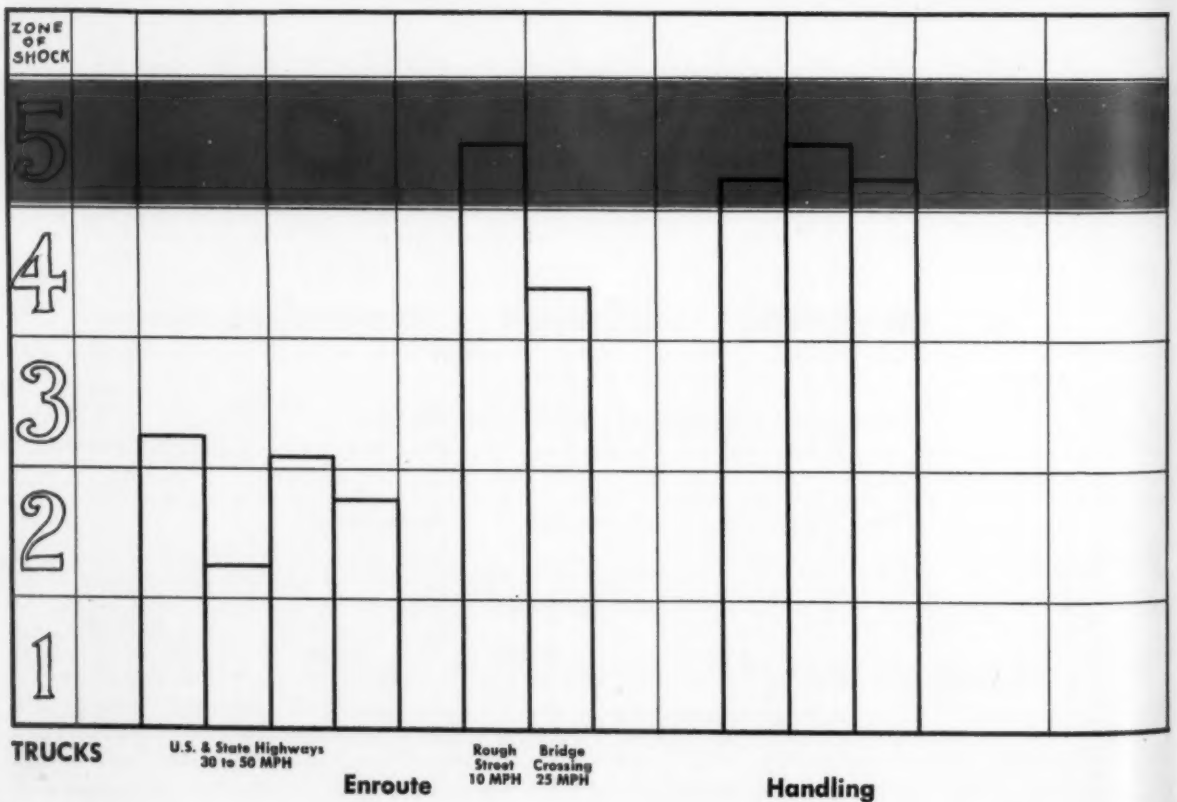
Bottom: A tape recording of shocks encountered in a railroad test shipment between Mansfield, Ohio, and Detroit, Mich. This test involved a freight car loaded with 96 automatic washers.





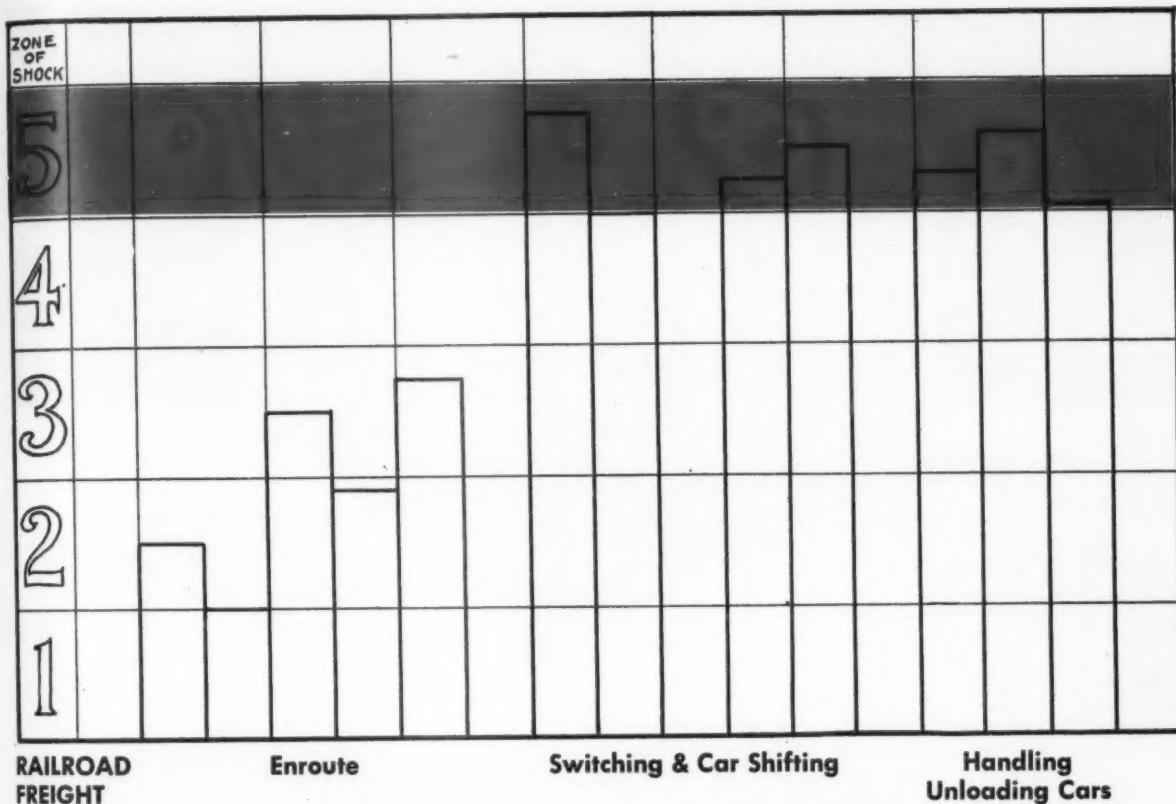


## Summary of averages for all test shipments

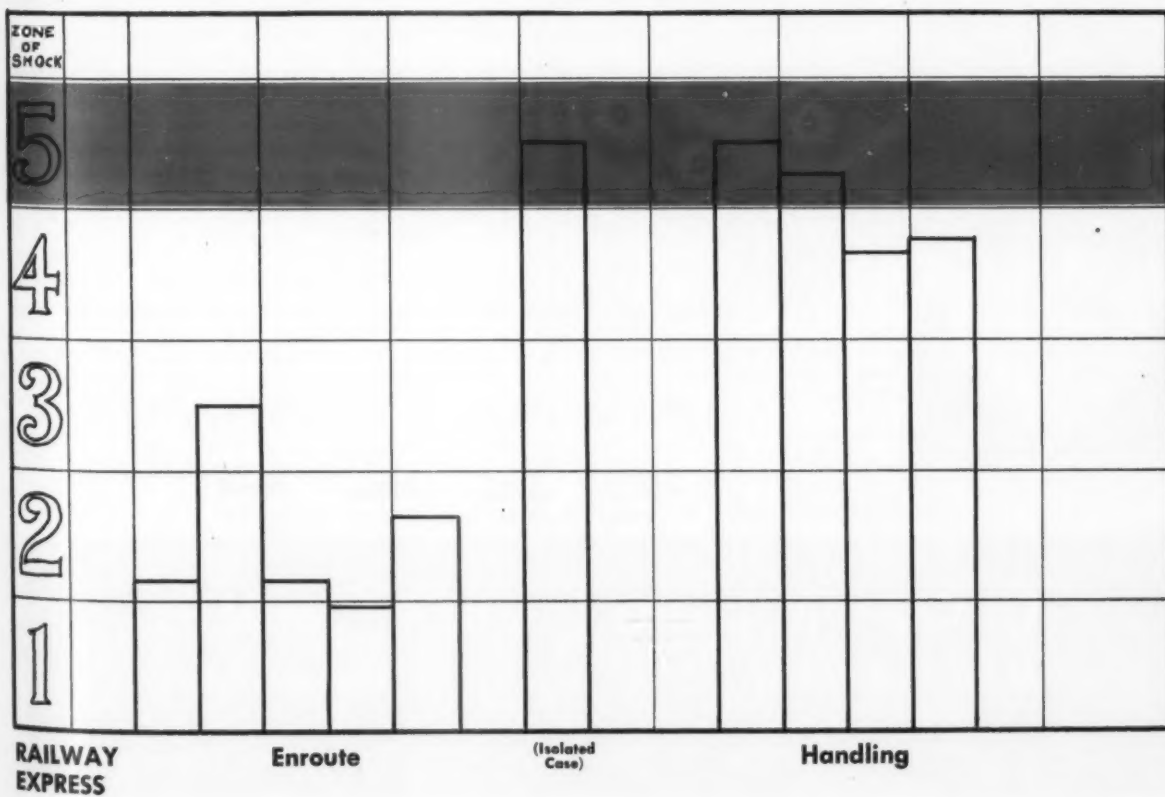


ST-10

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**... for all modes of transportation**

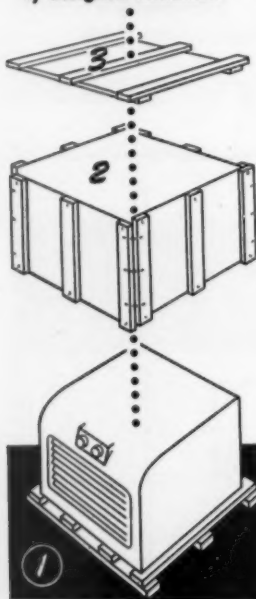




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- Fast assembly
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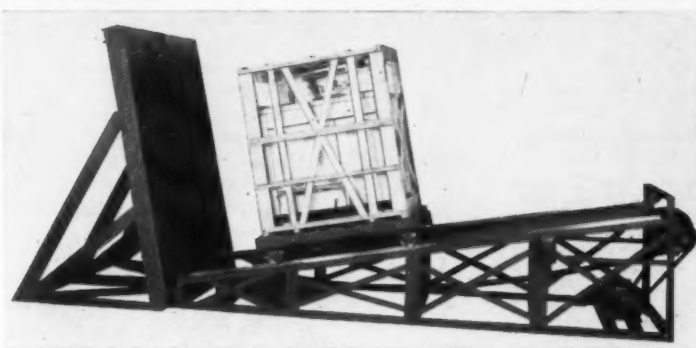
Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia  
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois



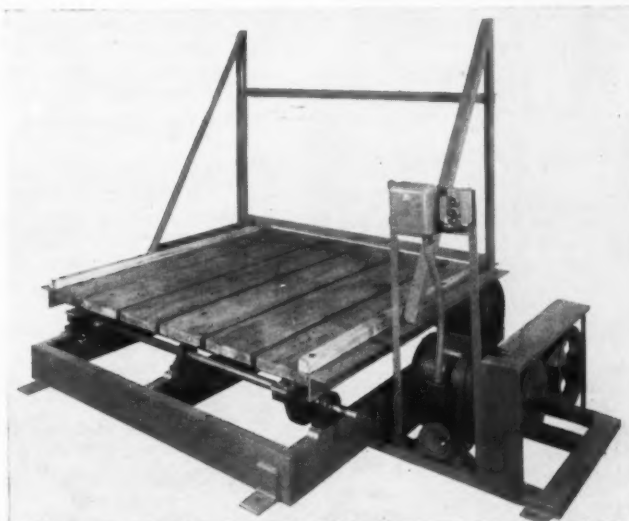
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Detroit, Michigan
- Admiral Corporation  
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- AllianceWare, Inc.  
Alliance, Ohio
- Altorfer Bros. Company  
Peoria, Illinois
- American Kitchens Division  
Avco Mfg. Corp.  
Connersville, Indiana
- Apex Electrical Manufacturing Co.  
Cleveland, Ohio
- Appliance & Electronics Division  
Avco Manufacturing Corp.  
Cincinnati, Ohio
- Automatic Washer Company  
Newton, Iowa
- Barrows Porcelain Enamel Company  
Cincinnati, Ohio
- Beam Manufacturing Company  
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Webster City, Iowa
- The Bellaire Enamel Company  
Bellaire, Ohio
- Belmont Stamping & Enameling Co.  
New Philadelphia, Ohio
- Bendix Home Appliances  
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- Davis Products Co.  
Niles, Michigan
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Affiliated Gas Equipment, Inc.  
Monrovia, California
- Dearborn Stove Company  
Chicago, Illinois
- Deepfreeze Appliance Division  
Motor Products Corporation  
North Chicago, Illinois
- Detroit-Michigan Stove Company  
Detroit, Michigan
- The Dexter Company  
Fairfield, Iowa
- Dixie Products, Inc.  
Cleveland, Tennessee
- Dostal & Lowey Company, Inc.,  
Menomonee Falls, Wisconsin
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Alliance, Ohio
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Pittsburgh, Pennsylvania
- Firestone Steel Products  
Akron, Ohio
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Wyandotte, Michigan
- The Fletcher Enamel Company  
Dunbar, West Virginia
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- The Floyd-Wells Company  
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Milwaukee, Wisconsin
- Lisk-Savory Corporation  
Buffalo, New York
- Locke Stove Company  
Kansas City, Missouri
- Logan Engineering Company  
Chicago, Illinois
- Luxra Company  
Atchison, Kansas
- Magic Chef, Inc.  
Cleveland, Ohio
- Magic Chef, Inc.  
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- Malleable Iron Range Company  
Beaver Dam, Wisconsin
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Oakland, California
- Manitowoc Equipment Works  
Manitowoc, Wisconsin
- The Maytag Company  
Newton, Iowa
- McCray Refrigerator Company, Inc.  
Kendallville, Indiana

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Dubuque, Iowa

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Bloomington, Illinois

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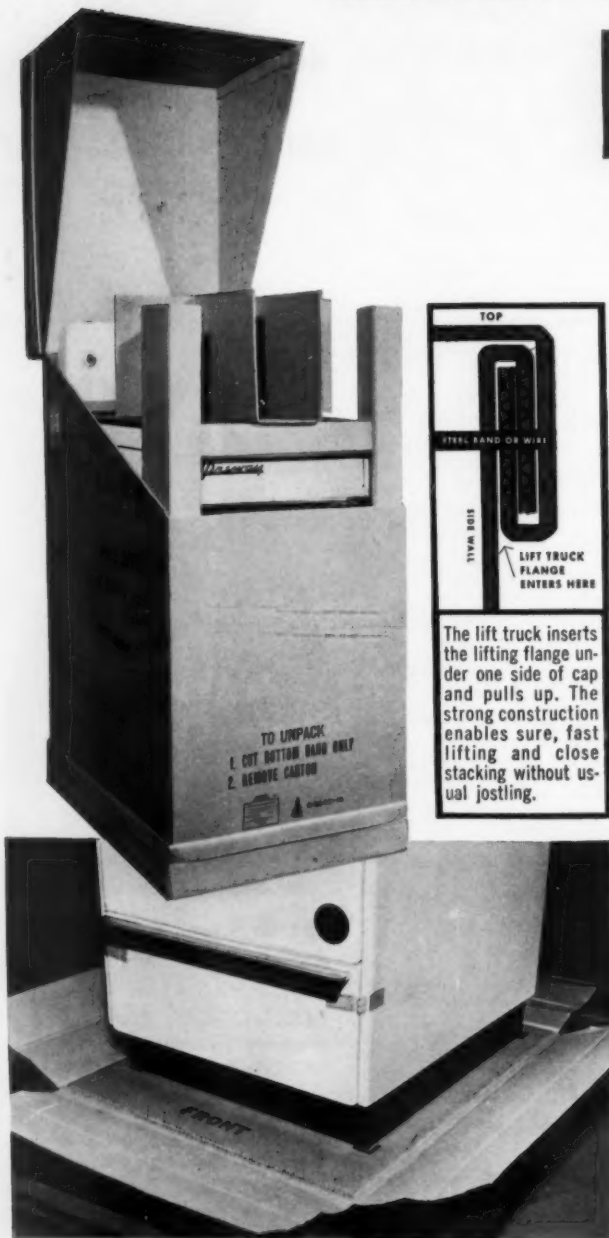
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6. This custom designed heavy-duty shipping container is approved by the Consolidated and Uniform Freight Classifications Committee for rail shipments.

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ST-16

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# Packaging, handling show set for Chicago

exposition to be held September 28-30 at the Coliseum, with short courses on packaging and materials handling held at the Congress Hotel

THE 9th annual Industrial Packaging and Materials Handling Exposition will be held at the Coliseum, in Chicago, September 28-30. In addition to exhibits of the latest in packaging materials and handling equipment, there will be the annual Protective Packaging and Materials Handling Competition, and the annual Packaging and Materials Handling Short Course.

This annual triple event is sponsored by the Society of Industrial Packaging and Materials Handling Engineers. This year the short course (which begins a day earlier than the Exposition) will be held at the Congress Hotel under the auspices of the Mechanical Engineering Department of the University of Illinois Extension Division.

The short course program is divided into three sections: (1) packaging fundamentals, (2) materials handling fundamentals, and (3) special management. Registration can be made either on a daily fee basis or on a full course basis.

The "fundamentals" courses were developed particularly for the person who is new to the field of packaging or materials handling or whose responsibilities in his company may be divided between packaging or materials handling and other work.

The "special management" course is developed particularly for the experienced packaging or materials handling person who is interested in broadening his knowledge of current trends at an advanced level.

## SHORT COURSE OUTLINE

Monday morning, September 27

Fundamentals of Packaging Sec-

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tion — Chairman, J. F. Carrigan, Spiegel, Inc., Chicago, Ill.; "Rules of the Game and History of Shipping," Frank W. Green, industrial consultant, Springfield, Mass.; "Paper as a Packaging Medium", F. S. Leinbach, Reigel Paper Co., New York City; "Cutting Costs in the Shipping

Room", Mrs. Elaine Pitts, Sperry & Hutchinson Co., Chicago.

Fundamentals of Materials Handling Section — Introduction — Chairman, A. R. Vaughn, Kraft Foods Co., Chicago; "Where Does the Materials Handling Factor Enter Your Job?", I. L. Reis, Department of Mechanical

Ray A. Mantz, chairman of the Protective Packaging and Materials Handling Competition, is shown looking at the first entry submitted for judging. Mantz is also supervisor of materials handling and product protection laboratory of International Harvester's manufacturing, research department.



Engineering, University of Illinois, Urbana, Ill.; "Can You Afford to Buy Muscle-Power?", J. G. Greene, Baker Industrial Truck Co. of Illiana, Chicago; "Excessive Handling and Its Effect on Your Product's Cost", speaker to be announced.

*Special Management Section* — Chairman, Walter Byrd, Standard Brands, Inc., New York City; "Consumer Packaging Review", details to be announced.

#### Monday afternoon, September 27

*Fundamentals of Packaging* — Interior Packaging — Chairman, J. F. Carrigan, Spiegel, Inc.; "Surface Protection and Elements of Preservation for Commercial and Export", N. L. Ripich, American Tank & Fabricating Co., Cleveland; "Principles of Cushioning — Shock and Vibration — Flexible Interior Forms", speaker to be announced; "Rigid Interior Forms — Partitions and Pads",

speaker to be announced later.

*Fundamentals of Materials Handling* — Introduction — Chairman, A. R. Vaughn, Kraft Foods Co.; "Palletization and Its Economy in Handling Conventional and Odd Shapes", speaker to be announced; "A Pallet to Meet Your Needs", H. Bernstein, Sterling Lumber & Supply Co., Chicago; "Cheaper by the Unit — I" (railroad cars, semi-trailers and trucks as units), A. Buy, Acme Steel Co., Chicago; "Cheaper by the Unit — II" (special containers and pallets), Earl K. Gustin, Bendix Products Division, Bendix Aviation, South Bend, Ind.

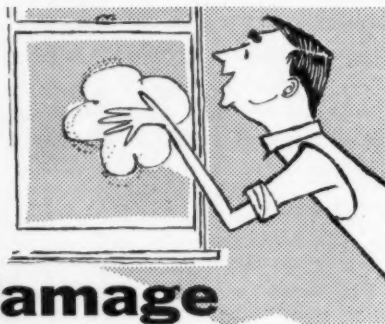
*Special Management Section* — Principles of Work Simplification in Packaging and Materials Handling — Chairman, K. J. Trigger, College of Engineering, University of Illinois; "Philosophy of Work Simplification — Why's and Wherefore's" — I. L. Reis, Department of Mechanical Engineering, University of Illinois; "Mechanics of Work Simplification in Packaging and Materials Handling", L. C. Pigage, Department of Mechanical Engineering, University of Illinois.

#### Tuesday morning, September 28

*Fundamentals of Packaging* — Interior Packaging — Chairman, J. F. Carrigan, Spiegel, Inc.; — "Folding and Set-Up Boxes", G. V. Bayly, Ohio Boxboard Company, Rittman, Ohio; "Corrugated and Fiberboard Containers", W. L. Dalton, Container Laboratories, Inc., Chicago; "Basic Packaging in Consumer Goods Development", James R. Shipley, Liberal Arts Department, University of Illinois.

*Fundamentals of Materials Handling* — Equipment Review — Chairman, A. R. Vaughn, Kraft Foods Co.; "Cost-Cutting Manual Handling Equipment", W. R. Thomas, Thomas Truck & Caster Co., Keokuk, Iowa; "Cost-Cutting Cranes and Hoists", Q. J. Winsor, MOR Product Division, Thew Shovel Co., Lorain, Ohio; "Cost-Cutting Fork Trucks and Related Equipment", speaker to be announced (Yalk & Towne representative); "Cost-Cutting Conveyors", H. Hejmanoski, Lamson Corp., Chicago.

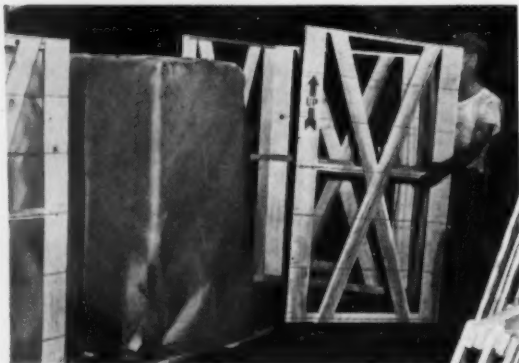
## what polishing a window can teach you about abrasion damage



Ever notice the harder you rub a window, the more dust and lint is attracted to it? Now manufacturers have found the same principle causes abrasion damage in shipping metal and enamel-finished products.

Slight friction due to car movement creates static electricity, attracting dirt, dust and soot to unprotected surfaces. These abrasive particles can ruin a fine finish. Result: lost sales, damage claims.

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for your product to seal out dirt, dust and fumes
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Specified by leaders in safe transit packaging for appliances, furniture ... any lacquer, porcelain, wood or plastic finish. Also available in double-thick paper with special non-stain laminant. Ask your Cromwell paper jobber. Or write now for full details.

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*Special Management Section* — Chairman to be announced; "Packaging Machinery Review," representatives of the Packaging Machinery Manufacturers Institute; "The MAPI Formula for Equipment Justification and Replacement", L. E. Doyle, Department of Mechanical Engineering, University of Illinois.

#### Tuesday afternoon, September 28

*Fundamentals of Packaging* — Exterior Containers — Chairman, J. F. Carrigan, Spiegel, Inc.; "Cleated and Solid Fibre Boxes", W. B. Keefe, Westinghouse Electric Corp., Mansfield, Ohio; "Cost Reduction and Damage Control in the Packaging Operation", J. W. Kraus, Thompson Products, Inc., Cleveland, Ohio.

*Fundamentals of Materials Handling* — Chairman, A. R. Vaughn, Kraft Foods Co.; "Modern Handling Methods from Old Plant Layouts — Food Industry", S. A. Henrici, H. J. Heinz Co., Pittsburgh; "Modern Handling Methods from Old Plant Layouts — Scientific Apparatus and Supplies", L. A. Seversen, Central Scientific Co., Chicago; "Modern Handling Methods from Old Plant Layouts — Electronics Industry", A. Petersen, Zenith Radio Corp., Chicago.

*Special Management Section* — Chairman to be announced; "What's New — Unveiling New Packaging and Materials Handling Ideas" — A rapid-fire review of ideas, products, and techniques on display at the show which must be: (1) new itself, (2) application must be new, and (3) it must now have been previously announced to the general trade.

#### Wednesday morning, September 29

*Fundamentals of Packaging* — Exterior Containers — Chairman, J. F. Carrigan, Spiegel, Inc.; "Wood Containers—Nailed Wooden Boxes, Wirebound Boxes, Cleated Wooden Boxes", N. L. Ripich, American Tank & Fabricating Co., Cleveland; "Metal Fibre and Glass — Cans, Drums, Carboys", J. F. Carrigan, Spiegel, Inc.

*Fundamentals of Materials Handling* — Food Packaging — Chairman, Walter J. Byrd, Standard Brands, Inc.; "Methods of Evaluating Packaging Materials", speaker to be announced; "The Value of Moisture Vapor Permeability Rates when Selecting Flexible Packages", speaker to be announced; "Revamping Packaging Machines to Keep up with Modern Production Requirements", Douglas Kirk, Quaker Oats Company, Chicago.

#### Thursday morning, September 30

*Fundamentals of Packaging* — Chairman, J. F. Carrigan, Spiegel, Inc.; "Putting Experience to Work", K. R. Marvin, Eastman Kodak Co., Rochester, N.Y.; "Challenge to the Packaging Engineer", Earl B. Candell, General Electric Co., Cleveland.

*Fundamentals of Materials Handling* — Chairman, A. R. Vaughn, Kraft Foods Co.; "Case History of a Recent Major Materials Handling Saving in Foundry

to Page ST-20 →



**CUSH-ON-STRAP** is the only padded strapping for protective packing of appliances and other finished metal and wood products.

CUSH-ON-STRAP has giant strength — yet will not stain or mar the finest finishes . . . eliminates shipping damage such as broken catches, hinges, drawer tracks, etc., preventing costly replacements. CUSH-ON-STRAP is tailored for each job. While it is supplied continuous on fibre throw-away reels, the lengths are predetermined with the metal scored for ease in breaking. Standard steel tensioners and sealers may be used, for at each end of a length 6" of metal is free from padding. Saves you money . . . CUSH-ON-STRAP eliminates waste, ends fussy pre-assembly, is applied faster and with less labor. CUSH-ON-STRAP in one product, (steel padded with fluffy cellulose) is a means of strapping everything from automotive finished parts to x-ray equipment, and from household furniture to office equipment. Mail the convenient coupon for full particulars today.

USE THE COUPON to learn how we can serve you in the packing and shipping of your products.

**SACKNER PRODUCTS**  
900 Ottawa Ave., N. W.  
Grand Rapids, Michigan

How can CUSH-ON-STRAP lower our shipping and packing costs?

- ☐ Our products are.....
- ☐ Please have your Packaging Engineer demonstrate the advantages of CUSH-ON-STRAP.

Firm Name .....

Address .....

By..... Title.....

*Sackner Products*

900 Ottawa Avenue, N. W.

GRAND RAPIDS 2, MICHIGAN

Industry", speaker to be announced; "Case History of a Recent Major Materials Handling Saving in the Meat and Food Packaging Industry, B. E. Hoover, Armour & Company, Chicago; "Case History of a Recent Major Materials Handling Saving in the General Manufacturing Industry", R. Heiser, Moto Truc Company, Cleveland; "Case History of a Recent Major Materials Handling Saving in the Trucking Industry", C. Martin, Den-

ver-Chicago Trucking Co., Chicago; "Case History of a Recent Major Material Handling Saving in the Plumbing and Heating Supply Industry", C. R. Gustafson, American Radiator & Standard Sanitary Corp., Louisville.

#### AMA PACKAGING VICE PRES.

The American Management Association has elected W. L. Romney, of Proctor & Gamble, Packaging Division vice president.

#### 36 SAFE TRANSIT LABORATORIES

With other certifications pending, 36 laboratories are already participating in the NST Program.

The certified laboratories include:

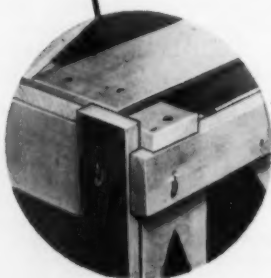
American Gas Associations Labs.  
Los Angeles, California  
Atlas Plywood Corporation  
Lawrence, Massachusetts  
Bigelow-Garvey Lumber Company  
Chicago, Illinois  
Chicago Mill and Lumber Company  
Chicago, Illinois  
Container Corporation of America  
Chicago, Illinois  
Container Laboratories, Inc.  
New York City, New York  
Container Laboratories, Inc.  
Chicago, Illinois  
Cozier Container Corporation  
Cleveland, Ohio  
Dura-Crates, Inc.  
Indianapolis, Indiana  
The Fairfield Paper & Container Co.  
Baltimore, Ohio (project 1-a only)  
Fort Wayne Corrugated Paper Company  
Fort Wayne, Indiana  
General Box Company  
Des Plaines, Illinois  
The Hinde & Dauch Paper Company  
Sandusky, Ohio  
Indiana Wire Bound Box Company  
Indianapolis, Indiana  
Inland Container Corporation  
Indianapolis, Indiana  
International Paper Company  
Los Angeles, California  
International Paper Company  
Chicago, Illinois  
International Paper Company  
St. Louis, Missouri  
International Paper Company  
Whippany, New Jersey  
International Paper Company  
Wooster, Ohio  
International Paper Company  
Georgetown, South Carolina  
L.A.B. Corporation  
Skaneateles, New York  
Love Box Company  
Wichita, Kansas  
The Mengel Company  
Louisville, Kentucky  
The Mengel Company  
New Brunswick, New Jersey  
The Mengel Company  
Fulton, New York  
The Mengel Company  
Winston-Salem, North Carolina  
The Nashville Corrugated Box Co.  
Division of The Mengel Company  
Nashville, Tennessee  
Ohio Boxboard Company  
Rittman, Ohio  
Package Research Laboratory  
Rockaway, New Jersey  
Packaging Service Company  
Wyncote, Pennsylvania  
The Don L. Quinn Company  
Chicago, Illinois  
Rathborne, Hair and Ridgway Box Co.  
Chicago, Illinois  
Twin Cities Container Corporation  
Benton Harbor, Michigan  
U. S. Testing Company, Inc.  
Hoboken, New Jersey  
Union Bag & Paper Corporation  
Savannah, Georgia



Warehouse of a large Department Store, showing gas ranges stored in Bigelow-Garvey "Tight Corner" collapsible hinged crates.

**The Tight Corner is Stronger**

NOTE  
CORNER  
LOCKING  
FEATURE



B's A  
B G  
EXCLUSIVE

B-G Tight Corner Collapsible Hinge gives all Bigelow-Garvey Crates and Pallet Boxes that extra strength and rigidity to withstand normal handling and transit hazards.

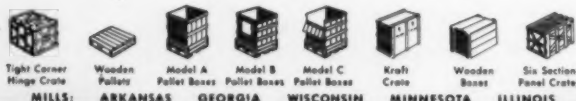
B-G Containers are pre-tested and meet national safe-transit specifications.

B-G Tight Corner Hinged Crates and Boxes are engineered to your particular requirements and give extra assurance of the safe delivery of your product.

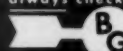
B-G Containers are engineered for strength and lightness. Nail holes are pre-drilled for saving time in the assembly of the three component parts—top, bottom, and collapsible side walls.

B-G Tight Corner Collapsible Hinged Containers and Pallet Boxes are Profit Items for you in your shipping and handling program, when you consider the safety of your product, the time saved and the steadily rising labor costs.

Whether for defense or civilian products, let Bigelow-Garvey's 30 years of packaging engineering experience be the solution of your storing, shipping, and materials handling problems.



always check



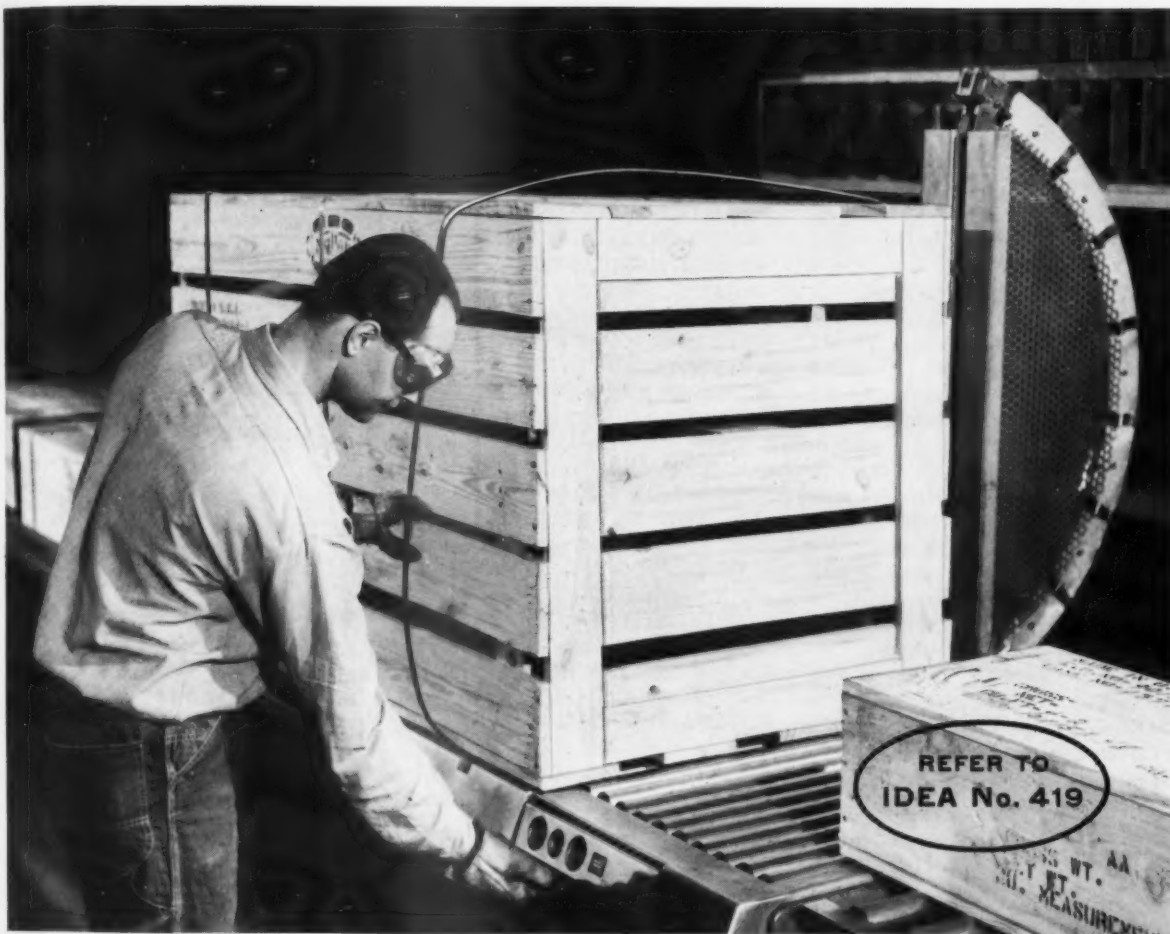
Write for complete details and prices to...

**BIGELOW-GARVEY**  
lumber company

General Office and Laboratory

320 W. HURON STREET • CHICAGO 10, ILLINOIS

Phone  
Whitehall  
4-5252



## **AIM\*** for PRODUCTION-LINE PACKAGING with Acme Steel Strapping Machines



Acme Idea Man,  
Harold Schultz of  
Detroit, worked with  
Chrysler officials  
in setting up this  
packaging system.

ask your  
**\*Acme Idea Man**  
to help solve your  
problems

Industry is discovering new economies in time and money where centralized strapping operations have been made automatic. Acme Steel Strapping Machines, for example, help maintain the continuous flow of overseas shipments at the Chrysler Corporation plant at Marysville, Michigan (Idea No. 419). Here, the size or shape of the container makes little difference in moving export boxes and packages hour after hour through the machine . . . automatically tensioning, cutting and welding the strapping.

There is a place for Acme Steel Strapping Machines wherever fast, easy application of steel strapping is required on a continuous, volume basis. Ask your Acme Idea Man for complete details. Or, write Acme Steel Products Division, Dept. RS-94, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Illinois.

**AIM** For Safe, Lower-Cost Shipping

ACME STEEL CO.  
CHICAGO  
ILL.

**ACME  
STEEL**



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*"I saw your ad in finish"*

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### CERAMIC ENGINEER

Work on porcelain enamel. Only experienced Engineers will be considered. Send complete resume and salary requirements. Replies strictly confidential. Our personnel are aware of this ad.

Address reply to Box 954, c/o finish, York St. at Park Ave., Elmhurst, Ill.

### HINDE & DAUCH TO HOST OHIO PURCHASING AGENTS

The Hinde & Dauch Paper Co. will be host to the North Central Ohio Purchasing Agents Association meeting, September 21, in Sandusky, Ohio. The program will include a plant tour and observation of "packaged design" as may be in process in the Hinde & Dauch laboratory.

The post-dinner meeting will feature a showing of the National Safe Transit Committee 16 mm. sound-color film along with a color film produced by the Southern Railroad to complete a session on packaging and Safe material handling.

### GENERAL BOX BUILDING CORRUGATED BOX FACTORY

First step in General Box Company's program for expanding operations in the corrugated box field is the construction in Louisville, Ky., of a corrugated box factory now nearing completion. Costing \$800,000, the factory will be capable of supplying 30,000,000 square feet of corrugated board per month, according to William C. Embry, vice president and general manager of the corrugated plant.

# Why Porcelain Enamel puts more

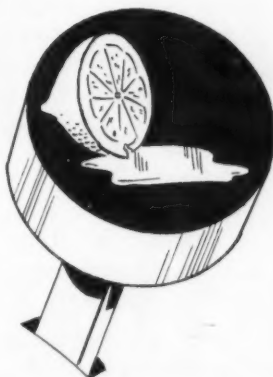
## INTO YOUR PRODUCTS

A porcelain enameled finish on your products offers so many unusual advantages that it **stands out** as a sales-aid in comparison with other finishes. And no wonder! What other finish can compare with all these features:



### HEAT-RESISTANT

Forgotten cigarettes or even hot irons don't harm its hard, glossy surface. Since it is processed at 1550 F, porcelain enamel will withstand any temperature it is likely to encounter in home service.



### RESISTS ACIDS

Acid-resisting porcelain enamel is not damaged by fruit juices or chemicals commonly used in the home.



### COLOR PERMANENCE

Porcelain enamel never "fades out." It can be supplied in any color and in any variations of shades.



### EASY TO CLEAN

There are no tiny surface pores in porcelain enamel to collect dirt and moisture. So dirt and stains are easy to wipe off.

Of course, the metal beneath the porcelain enamel surface must have excellent bonding qualities, flatness, and uniform fabricating characteristics. That's why more manufacturers have used more Armco Enameling Iron over a longer period than any other enameling base. That is why too it has become known as the "World's Standard Enameling Iron."

## Armco Steel Corporation

4974 CURTIS STREET, MIDDLETOWN, OHIO



SHEFFIELD STEEL • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION



# America's only Electric Timers with the exclusive Bell-Chime Signal



THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT



October • 1954

VOL. 11 • NO. 10

finish

**MONTHLY TRADE PUBLICATION**

Established January 1944

Published by

**DANA CHASE PUBLICATIONS**

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Elmhurst, Illinois

Telephone • TErrace 4-5280

TErrace 4-5281

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is \$5.00 per year, domestic. To all other countries \$8.00 per year (U.S. funds).

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Accepted under the act of June 5, 1934, at Aurora, Illinois, authorized January 7, 1948.

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METAL PRODUCTS MANUFACTURING  
FROM RAW METAL TO FINISHED PRODUCT

LORD HALL LIBRARY



DEFECTIVE PLUMBING-WARE



DEFECTIVE WASHERS AND RANGE TOPS



THE CAUSTIC BATH



THE WASH-OFF



SANDBLASTING

## D-ENAMELING SAVES UP TO 50% OF ORIGINAL PART COST

Over the past three years, D-Enameling has more than proved its dollars and cents value to manufacturers of ranges, bathtubs, sinks, refrigerator liners and washing machine tubs. Before D-Enameling, these manufacturers had to scrap defective parts. All the material and labor that went into them was a complete loss. Now, for a small cost, these same manufacturers are able to transform defective parts into first line salable, profit-building products. To cost-conscious management it is obviously smart business to spend a few dollars to save many more. One stove manufacturer, for example, through D-Enameling has been able to save as much as 50% of the original cost of range tops. If you're interested in cutting costs, it will pay you to find out about D-Enameling now. You'll be agreeably surprised how much the simple economics of D-Enameling can benefit you.

May we discuss this soon?

### THESE INDUSTRY LEADERS KNOW FROM EXPERIENCE THAT D-ENAMELING TRANSFORMS SCRAP LOSS INTO PROFIT DOLLARS

ARROW SIGN CO. • BRIGGS MANUFACTURING COMPANY • CAPITAL AIR-  
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## New Process *D-Enameling* Corp.

Highland and New Haven Avenues • Aurora, Illinois

At RCA-ESTATE Appliances..



## These Crank Presses

are a key part of new stamping facilities



Catalog G-53 provides condensed data on the entire Verson line from the smallest press brakes to the largest straight side presses. Be sure and ask for a copy.

A Verson Press for every job from 60 tons up.



ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

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MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • Verson-WHEELON HYDRAULIC PRESSES

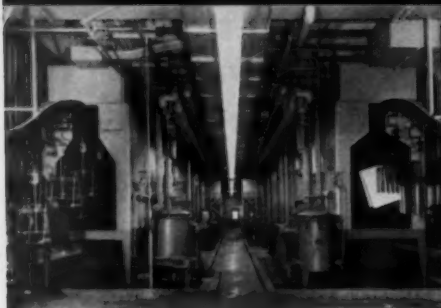
finish OCTOBER • 1954



# COMPLETE

# Finishing SYSTEMS

... for ENAMELS • LACQUER • PAINT • VARNISH



Mahon Metal Cleaning and Rust Proofing Machines at G.E. One is Seven-Stage for white parts. The other Six-Stage for black parts.



One of the two Mahon Dry-Off Ovens at the Exit End of the Mahon Metal Cleaning and Rust Proofing Machines at G.E.

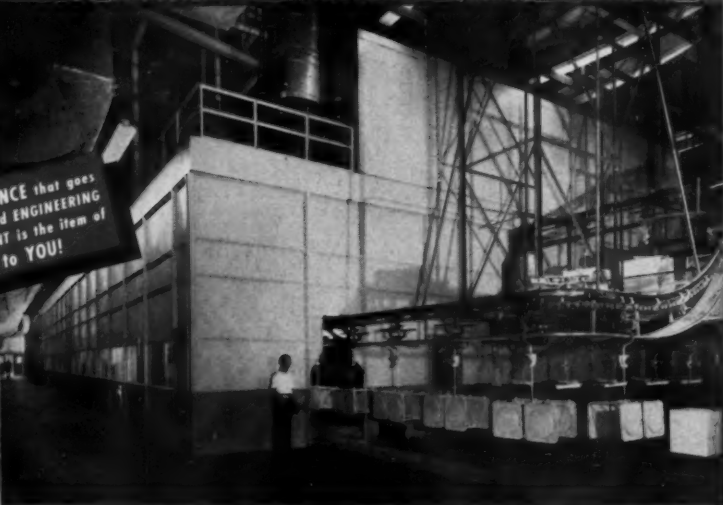


One of two Mahon Hydro-Filter Spray Booths in the Complete Mahon Finishing System at General Electric Co., Louisville, Ky.



Through the glass you see the interior of the Mahon Automatic Electrostatic Spray Booth, where finish coat enamel is applied.

... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!



General view showing exterior housing of the Complete Mahon Finishing System in General Electric's Home Laundry Equipment Department at Louisville, Kentucky. This Housing encloses all processing and painting operations. Finish Baking Ovens are located above the enclosure.

## More and More HOME APPLIANCES Receive Their FINE FINISH in Modern, COMPLETE MAHON FINISHING SYSTEMS!

In the Home Laundry Equipment Department of General Electric Company, Louisville, Kentucky, a Complete Mahon Finishing System produces the fine finish demanded by one of the world's largest home appliance manufacturers. The system includes an enclosure, which houses all metal processing and painting equipment, with Finish Baking Ovens, Heating Units, Filtered Air Supply and Exhaust Fans located above... it is a complete, ultramodern finishing system combining and coordinating all major units of equipment and other essential facilities into an efficient, smooth-running, economical production operation. There are actually three finishing lines in this system: One is a flow coating line for black parts. Another flow coating line applies the first coat of enamel—both Flow Coaters are equipped with controlled atmospheric paint surface conditioning chambers in the drip zone. The third line is a combination manual and automatic electrostatic spray for the finish coat of enamel. If you are contemplating new finishing equipment, you, like thousands of other quality-minded manufacturers, will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements... and better qualified to do the all-important planning, coordinating and engineering of equipment—which is the key to fine finishes at minimum cost. You will find also, that Mahon equipment is built better for more economical operation over a longer period of time. Mahon will furnish your complete system on one contract... undivided responsibility for the entire job safeguards you against complications which may upset your production plans and subsequent schedules. See Sweet's Plant Engineering File for information, or write for Mahon Catalog A-655.

**THE R. C. MAHON COMPANY**

HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling, and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems and Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.

# MAHON



from the  
Editor's Mail

#### good pictorial sequence

Gentlemen:

May I express my appreciation to your staff for its consistent good writing and excellent editing. So often in publications of this type there are periods or single issues that one wishes he had never received because of some article or editorial filled with half truths or misconceptions. I have sincerely enjoyed each issue. I should also like to compliment the lay-out staff for its intelligent handling of the difficult task of good pictorial sequence.

Being a packaging man I am, of course, most interested in the Safe Transit Section, but it has been amazing to me how well they have complemented each other.

Please keep up the excellent standard you have set for yourselves. This reader is most grateful.

D. F. Teeters  
General Mgr. & Packaging Engr.  
Majac Company  
Pittsburgh, Pennsylvania

#### processing hot water tanks

Gentlemen

Your magazine *finish* has carried an excellent series of articles on the processing of hot water tanks. We are interested in receiving copies of these articles if they are available.

I would also like to take this means of expressing our comments on the fine magazine which you produce. We are always anxious to receive the new issue of *finish* as it always contains such timely and helpful information.

J. E. Bourland  
Vice president  
Texlite, Inc.  
Dallas, Texas

#### earlier foremen's club

Gentlemen:

We have just finished reading your August 1954 issue of *finish* and found it to be very helpful and informative.

We would appreciate your forwarding to us further information on thickness gauge for protective and

to Page 9 →

finish OCTOBER • 1954

NICKELOID

more than a metal!

METALS

You by-pass 3 out of 5 basic production steps . . . cut costs 15 to 20 per cent or more when you use the Nickeloid Method of producing plated metal parts and trim. That's because Nickeloid Metals are PRE-plated in durable, uniform finishes of chrome, nickel, copper or brass; require no cleaning, plating or polishing.\* And you don't have to pamper these versatile metals to retain their beautiful mirror-like finishes. Stamp, blank, bend or draw . . . they fit right into standard production techniques.



it's a  
method



The Nickeloid Method eliminates  
three costly steps

No cleaning, plating, polishing.  
Just fabricate and assemble. 2  
steps instead of 5! Nickeloid  
Metals are also available with  
Mar-Not protective coating, a  
fabrication and handling aid.

\*Pre-plated to base metals of steel, zinc, copper, brass and aluminum. Available in sheets and coils, interesting patterns and finishes.



Free Fabrication and Design Booklet  
24 pages of illustrations and reference-type material covering uses, properties and fabrication techniques for Nickeloid Metals. Send today!

NICKELOID METALS  
SINCE 1911



Sales offices in most principal cities

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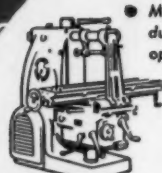
MACCO

MACCO

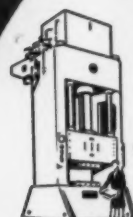
MACCO



• Macco increases production of machining operations.



• Macco gives better finish, with increased feed and speed on cutting operations—and longer tool life.



• Macco reduces rejects and makes for greater speed in producing quality stampings and forgings.

To further reduce your metal-processing production costs, there is a Macco Cleaner or Rust Preventive scientifically compounded to greatly improve the finish quality of your product, be it enamel, lacquer, chromium plate or only rust proofing. Using highly superior Macco Compounds means not only better products, but also great reduction in production line cost.

Macco sales engineers have the ability and the experience. Let them assist you materially in solving your specific metal-working problems.

for every  
metal processing  
job • there is a Better  
**MACCO** metal-working  
compound & cleaner



Macco No. 472 Soluble Cutting Lubricant • Macco No. 1 Cutting Paste  
Macco No. 16 Straight Cutting Oil  
Macco Clear Cut Concentrate—Cutting Oil Base

Mac Draw V. E. Compound, Easy Cleaning • Mac Draw No. 291 Pigmented Compound, Easy Cleaning • Mac Draw No. 34-S to Reduce Scoring and Breaking • Mac Draw No. 40 Compound for Stainless Steel • Mac Draw No. 96 Drawing Oil

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Macco No. 10 Solvent Cleaner and Rust Preventive • Macco Bluecoat Water Soluble Rust Preventive  
Macco Anti-Rust No. 306 All-Purpose Material • Macco Anti-Rust E. C. Extreme Conditions Rust Preventive • Macco Anti-Rust No. 9 Low Cost General Rust Protection

Macco Enamel Cleaner for Porcelain Enameling • Macco Platers' Cleaner No. 10 for Electro-Plating • Macco Cleaner No. 261 Very Heavy Duty Cleaner • Macco Special Stripper No. A-1 for Paints, Lacquer, Etc.  
Macco Machine Cleaner "S" for Pressure Washers • Macco No. 373 Emulsion Type Cleaner • Macco Machine Cleaner No. 71 for Cleaning and Phosphatizing

**MACCO**  
PRODUCTS COMPANY

Makers of Better Metal-Working Compounds Since 1931  
9210 SO. SANGAMON STREET • CHICAGO 20, ILLINOIS



## From the editor's mail

→ from Page 7

decorative coatings and operating cost figures on automatic spray washers.

We did note on page 80 of this magazine the article about Louis Ruthenburg, chairman of Servel, Inc., who was named as founder of the Foremen's Club, having established the first Foremen's Club in 1918.

As a matter of information, we have checked the records here at Royal Typewriter Company and we find that our Foremen's Club was established in 1911 at which time a different foreman was named to conduct the monthly meeting. From 1916 on officers were elected annually.

If you should desire any further information along this line, we have minutes of the meeting back to 1911.

**F. W. Barrett**  
Purchasing Director  
Royal Typewriter Company  
Hartford, Connecticut

Mr. Ruthenburg was referred to in an earlier news brief as the "founding father" of the *National Association of Foremen*.—Eds.

## appliance controls evaluation

Gentlemen:

Thanks for your kindness in sending a copy of the July issue of *finish*. We have subscribed to the journal recently because we were interested in the articles\* by George C. Pearce on the evaluation of performance for appliance controls.

We are glad to receive your journal, as I know it will contain other articles from time to time with which we are concerned besides the report of the Appliance Technical Conference.

**F. J. Schlink**  
Consumers' Research, Inc.  
Washington, New Jersey

\*This series of three articles by Mr. Pearce appeared in the April, May and June 1954 issues of *finish*.—Eds.

## steel television cabinets

Gentlemen:

Sometime within the last few months, I read an illustrated article in some trade publication on the finishing of metal television cabinets. The method described was a wood graining process using a gelatine roll.

If this article was printed in one of your publications, will you please

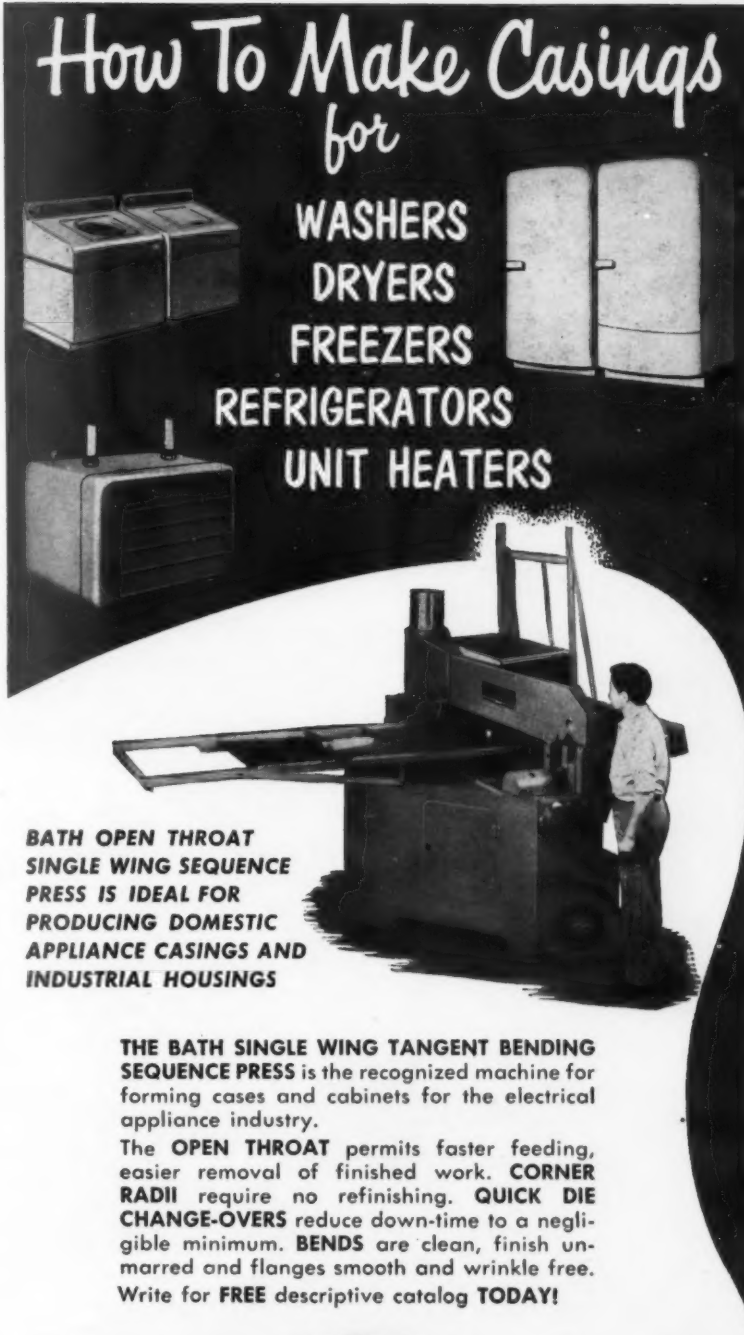
to Page 11 →

finish OCTOBER • 1954

# How To Make Casings

for

## WASHERS DRYERS FREEZERS REFRIGERATORS UNIT HEATERS



**BATH OPEN THROAT SINGLE WING SEQUENCE PRESS IS IDEAL FOR PRODUCING DOMESTIC APPLIANCE CASINGS AND INDUSTRIAL HOUSINGS**

**THE BATH SINGLE WING TANGENT BENDING SEQUENCE PRESS** is the recognized machine for forming cases and cabinets for the electrical appliance industry.

The **OPEN THROAT** permits faster feeding, easier removal of finished work. **CORNER RADII** require no refinishing. **QUICK DIE CHANGE-OVERS** reduce down-time to a negligible minimum. **BENDS** are clean, finish unmarred and flanges smooth and wrinkle free.

Write for **FREE** descriptive catalog **TODAY!**

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OLON, OHIO

THE CYRIL  
**BATH**  
COMPANY

MANUFACTURERS OF  
METAL FORMING  
MACHINERY

Located in the

Greater Cleveland Area



GENTLEMEN: Please send me your **FREE** catalog on Tangent Bending Sequence Presses.

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**THERE'S A  
RIGHT WAY  
TO MATCH  
*Ceramic  
Colors***

***Call Hommel***

Color matching from your varied stock can be troublesome, costly in matching time and production losses.

The right way to approach your color problem and get consistent uniform perfect color match is to call in specialists — The O. Hommel Company.

***It's our job to see that Hommel colors:***

- Eliminate time-consuming experiments
- Give a true match
- Work perfect in production and have all the characteristics needed to meet your customers specifications.

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**World's Most Complete Ceramic Supplier**

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## From the editor's mail

→ from Page 9

send me a copy of the issue or tear sheets of the article?

E. Harrigan  
Plant Superintendent  
Olympia Division  
General Metalcraft Corp.  
Olympia, Washington

The article referred to was published in March 1953 *finish* under the title of "Applying a Grain Finish to Steel Television Cabinets." Tear sheets have been forwarded, Mr. Harrigan. — Eds.

## home laundry industry meeting

Gentlemen:

Thank you most sincerely for the special section of *finish* reporting on the Home Laundry Equipment Industry meeting at Mackinac. The pictures are exceedingly good, and I enjoyed reading the articles and ads.

Again, may I express my appreciation to you for the opportunity to make a statement under my own by-line.

Guenther Bamgart  
Executive Director  
American Home Laundry  
Manufacturers Assn.  
Chicago, Illinois

## appliance technical conference

Gentlemen:

Thank you for the extra copy of July *finish* containing your editorial coverage of the Appliance Technical Conference which the writer had the pleasure of attending.

Our library subscribes to your magazine and we find it a very worthwhile publication. You are to be congratulated on doing an excellent job in this field.

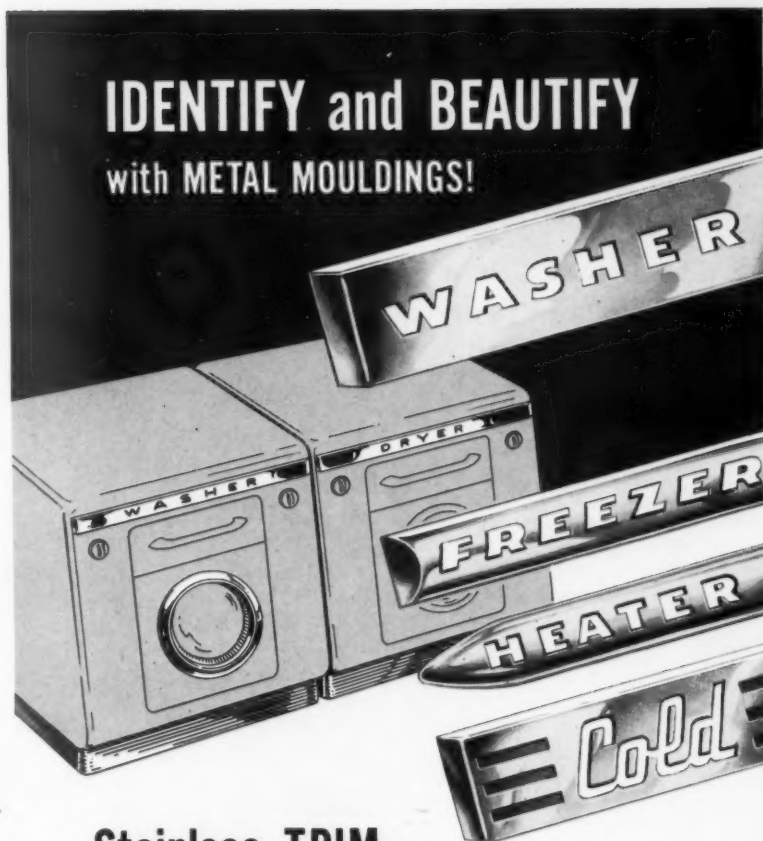
Leonard Tulauskas  
Staff Engineer  
P. R. Mallory & Co., Inc.  
Indianapolis, Indiana

## floor-type unloading unit for metal working equipment

Gentlemen:

In the September issue of *finish* we read your interesting article relative to a floor-type unloading machine for metal working equipment. We are very interested in this new self-contained unit; therefore, we would appreciate your forwarding to us the name of the manufacturer.

Walter Sievert  
Methods Engineer  
Milwaukee Stamping Co.  
Milwaukee, Wisconsin



## Stainless TRIM and NAME plate... all in One

Decorative trim is as necessary for sales appeal as a brand name or product identification... Together, these offer a double benefit—and at less cost. Lettering or trade marks can be added to a wide choice of Pyramid standard sections... Debossed and paint filled or embossed and satin finished. Write or call today for more information on these beautifying and money saving combinations.

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NEW YORK... CALIFORNIA

## SEND FOR YOUR FREE COPY OF "PLAN BOOK OF METAL MOULDINGS"

No one connected with the design or manufacture of any appliance should be without a copy of this book containing hundreds of standard and special mouldings. Send for your free copy today.

Without obligation, please send copy of  
"Plan Book of Metal Mouldings." F-10

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# Try Century Vit



## GROUND COAT



"Start right from the Steel out" is more than a slogan — it represents a policy and belief at Century that without an easy-working, trouble-free ground coat with good adherence or "Grip" no finish can give trouble-free service for the life of the product.

The millions of pounds of Century ground coat frit that are used every year by our customers give extra assurance of trouble-free finishes, both in the shop and on the finished product.

Century time-proved frits "put dollars in your pockets" too. They are priced right to start and there are "in plant" savings that count up fast.

If you haven't tried this economical, trouble-free enamel, contact us and we'll see that you have the opportunity.

An experienced field staff serves the plants of all Century customers. Phone PORTsmouth 7-7260.



### CENTURY VITREOUS ENAMEL COMPANY

6641-61 S. Narragansett Ave., Chicago 38, Ill.



## Special Power Spray Washer For Application of Dry Film Coats to Flat Sheets

**Takes Mill Steel — Cleans It,  
Applies and Dries the Coating  
with Speeds Up to 400 Sheets  
per hour**

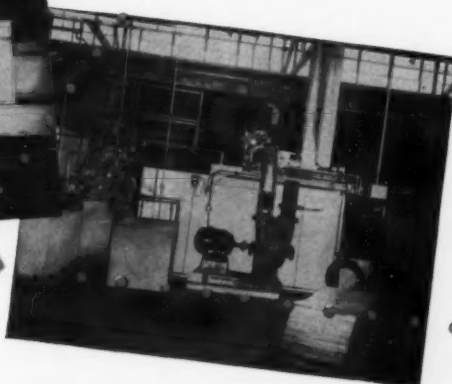
Here is another example of P-D engineering efficiency. The Power Spray Washer, shown in this completely automatic installation in the plant of a major appliance manufacturer, meets and solves important production problems. A special washer such as this was required to not only clean mill steel but to **apply and dry** a Dry Film Coat for

Completely Automatic Installation in Major Appliance Plant

drawing, stamping, etc. High productivity requirements were met by P-D engineering this washer to handle the flat pieces at speeds up to 400 per hour. This Two Stage Washer and Forced-Dry Oven is heated by direct gas fired, vertically mounted heaters.

PETERS-DALTON is an organization of specialists—staffed by men who KNOW the answers to your problems. Power Spray Washers (like the one illustrated) of all sizes, types and required uses, can be developed to meet your needs by P-D. Regardless of size—from a single unit to a complete system—an installation by Peters-Dalton can be depended on to give you the service and production you have the right to expect.

The two photographs at the right are actually continuing views of a Two Stage Washing Machine with Blow-Off Section. Flat sheets enter this continuous unit for cleaning and coating and exit completely finished at high speeds to the right.



P-D—one of the world's largest manufacturers of Complete Finishing Systems—also builds . . .

- Hydro-Whirl Paint Spray Booths
- Industrial Washing Equipment
- Drying and Baking Ovens
- Hydro-Whirl Dust Collecting Systems



### NEW POWER SPRAY WASHER BULLETIN

We have just published a new Technical Bulletin No. 301 on Power Spray Washers. It is completely informative, profusely illustrated, and contains engineering drawings of many types of Power Spray Washing Machines. We will gladly send you a copy if you will fill out and return this coupon.

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Title \_\_\_\_\_  
Company \_\_\_\_\_  
Street Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_





## The finish was only the beginning

A baked-enamel finish applied to Republic Electro Paintlok was the beginning of customer-attracting appearance and longer service life for this bakery goods display. The unit is made by Modern Metal Products Company, Greensboro, N. C.

Electro Paintlok is the zinc-plated steel sheet that is chemically treated to take paints, lacquers, synthetic enamels—and hold them for years.

Selection of Electro Paintlok for this application was based on the company's success in fabricating it for other products. They knew the tight zinc coating would not crack, peel or flake during normal fabricating operations.

They also knew their entire finishing operation would be speeded.

Electro Paintlok requires no special cleaning—only the removal of finger marks and warehouse dirt. The surfaces require no pre-etching. They are pre-conditioned for application of the baked-enamel finish.

Why not consider Republic Electro Paintlok for making your fabricated steel products more attractive, more serviceable, at less cost?

### REPUBLIC STEEL CORPORATION

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N. Y.

## REPUBLIC ELECTRO ZINC PLATED SHEETS

ELECTRO PAINTLOK • ELECTRO ZINCBOND



Other Republic Products include Carbon, Alloy and Stainless Steels — Sheets, Strip, Bars, Pipe, Tubing, Bolts and Nuts, Wire, Pig Iron



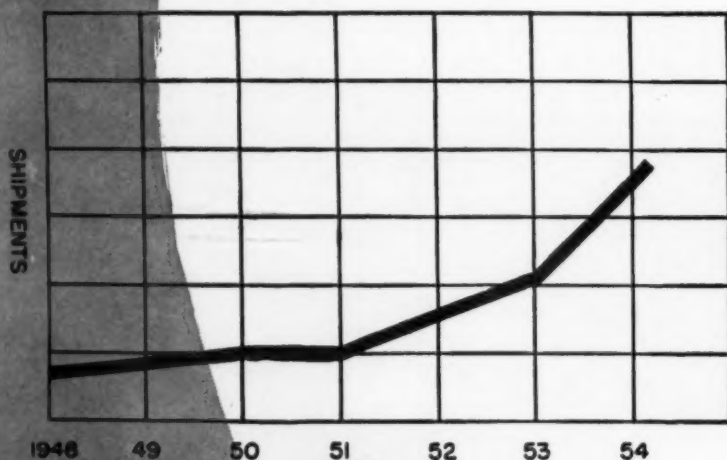
# THE finish *spotlight*



This console-type Airditioner, made by Modine, is designed for year around air conditioning of individual rooms in homes, apartments, hotels, motels, office buildings, schools and hospitals. Combined in the compact and attractive unit is the ability to cool, heat, ventilate, dehumidify and circulate air—with all functions subject to individual room control.

*the answer  
to your  
question...*

Contrary to some reports heard around the country, Foote lithium chemicals are being shipped to industry in quantities far in excess of our shipments in any previous year.



a simple  
chart that  
has surprised  
a great many  
users of  
lithium compounds...

**LAST CALL for participation**  
in the Second FOOTE LITHIUM AWARD PROGRAM. Awards totalling \$2,000 will be made late next year for the best papers describing new research on lithium chemicals or minerals in ceramics. **CLOSING DATE FOR ENTRIES IS NOVEMBER 1, 1954.** Write for information now.

The use of lithium by industry has mushroomed as predicted and so has production. The supply picture should continue to improve as new facilities are made available in 1955.

This is no idle chatter... it is based on sound facts. *Now* is the time to plan ahead with Foote lithium chemicals.



**LITHIUM FOR INDUSTRY**

*Kings Mountain, N.C. ... where Foote is mining the largest known deposits of spodumene.*



*Sunbright, Va. ... the world's largest lithium chemical plant.*



**FOOTE MINERAL COMPANY**

412 Eighteen West Cheltenham Building, Philadelphia 44, Pa.

RESEARCH LABORATORIES: Berwyn, Pa. • PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.



## Give your aluminum products sales-winning color with Du Pont Vitreous Enamel

Now you can give your aluminum products eye-catching colors to make them look better and sell faster! Du Pont Vitreous Enamel brings a whole new world of color to aluminum and is easily applied by ordinary enameling and firing procedures. Any degree of surface reflectivity can be obtained—from dull matte to high gloss.

A rugged, standard-thickness coating of Du Pont Vitreous Enamel resists abrasion, thermal shock, impact and flexing

... increases the rigidity of aluminum sheet by as much as 60%. It has high electrical insulating properties, and does not streak or lose color on washing with strong detergents.

And consider also that Du Pont Vitreous Enamel holds tight through saw-

ing, shearing, drilling and punching without exposing the metal. *Costly pre-fabrication of the aluminum can be largely eliminated.* Get the whole story on vitreous enamel. Our new folder tells where it can be used... how it is applied. Mail coupon for your free copy.

### WE CAN PUT YOU IN TOUCH WITH ALUMINUM ENAMELERS

Just check the box in the coupon below and we'll be glad to send you the names of experienced aluminum enamelers in your area.



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Electrochemicals Dept., Wilmington 98, Del.

☐ Please send me a copy of your free booklet on Du Pont Vitreous Enamel for Aluminum.

☐ Please have an experienced enameler get in touch with me.

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**VITREOUS ENAMEL**

FOR ALUMINUM



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY





## color sells . . . in plastics molded by General American

With competition toughening, most products can benefit from the extra sales appeal of *color* in plastics. General American's plastics molding facilities give you sales-making color you need . . . whether brilliant, subdued, contrasting, matching. Color *and* fine finish are *molded-in* for long service life. In addition, special painting, or metallizing can supply unusual effects. What's more, plastics can often give your product new design possibilities, strength, lightness and big volume production. Ask a General American engineer for ideas in plastics to help your sales.



**PLASTICS DIVISION**

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● Facilities unmatched anywhere: injection presses to 300 ounces, compression presses to 2,000 tons, reinforced plastics molding, die making, painting, assembly, packaging

## MEETINGS

### VENDING MACHINE SHOW

National Automatic Merchandising Association, convention and exhibit, Hotel Statler, Washington, D. C., October 10-13.

### GAS ASSOCIATION CONVENTION

American Gas Association, annual convention, Atlantic City, October 11-14.

### INDUSTRIAL HYDRAULICS SHOW

National Conference on Industrial Hydraulics, October 14-15, Sheraton Hotel, Chicago.

### NATIONAL SAFETY CONGRESS

National Safety Council, annual congress and exposition, Congress, Conrad Hilton, Morrison and LaSalle hotels, Chicago, October 18-22.

### PACKAGING INSTITUTE FORUM

Packaging Institute, annual forum, Roosevelt Hotel, New York City, October 25-27.

### NATIONAL METAL SHOW

National Metal Exposition and Congress, International Amphitheatre, Chicago, November 1-5.

### HOME LAUNDRY CONFERENCE

American Home Laundry Manufacturers Association, annual Home Laundry Conference, Hotel Commodore, New York City, November 4-5.

### MIDWEST ENAMELERS MEETING

Midwest Enamelers Club, luncheon-meeting, LaSalle Hotel, Chicago, November 6.

### ELECTRICAL MFRS. MEETING

National Electrical Manufacturers Association, semi-annual meeting, Haddon Hall, Atlantic City, November 8-11.

finish OCTOBER • 1954



**KOPPERS**

**Aeromaster FANS**  
ARE  
**Granodized**  
WITH GRANODINE®

**FOR EXTRA PROTECTION**

**KOPPERS** Precision-Engineered Air Delivery increases the efficiency of air flow in industrial cooling systems. Basic element is the Aeromaster Fan, and this unit is operated continuously, sometimes under severe conditions. Dependable, efficient operation is a "must".



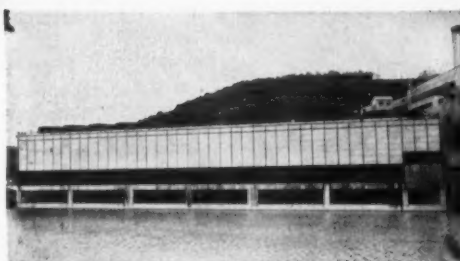
**KOPPERS** uses "Granodine" No. 50 to coat the 54-inch diameter hub of the 22-foot diameter fan shown above. "Granodine" phosphate coatings provide a "tooth" for adhesion of subsequent finishes and protect the underlying metal so that rust will not spread if these finishes are cracked or nicked.

**"Granodine"® anchors the finish.**



"Granodine" application on welded 54" Hub for Aeromaster 6-bladed 22-foot Cooling Tower Fan.

Aeromaster 22-foot Fans provide continuous air flow in C. H. Wheeler Cooling Tower at Pennsylvania Electric Company's Shawville Station, Pennsylvania



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**AMERICAN CHEMICAL PAINT COMPANY**



General Offices: Ambler, Penna.



Detroit, Michigan

Niles, California

Windsor, Ontario

## Producing premium priced stainless steel cookware

a photo story of how Cory employs localized induction annealing, argon-gas-shielded arc welding, automatic buffing and power assembly tools to hold production costs in line

### Part I — materials, cost cutting methods and induction annealing



Cory Corporation's stainless steel "Crown Jewel" coffee perculator has a gold-plated base — sells at \$50. Cory also is bringing out a stainless steel vacuum coffee brewer for domestic use. Its retail price will be something like \$5 higher than that of the glass model it replaces.

In 1950, Cory purchased Nicro Co., in Chicago, to manufacture its "Flavor Seal line of stainless steel cookware. These pots and pans — made of three-ply metal with stainless on both surfaces and mild steel in the middle to conduct heat — are sold directly to consumers at from twice to ten times the prices of the same size pans in lighter weights and other materials.

The Flavor Seal line resembles professional restaurant cookware more than it does the average product available through retail outlets. Yet the company finds that there's a ready and growing market for this higher-quality merchandise.

In going after this market Maurice Schraeger, president of the Flavor Seal subsidiary, points out there's a two-way squeeze on costs that has compelled his factory to exercise great ingenuity in design and production methods in order to keep

prices in line — even for a premium product.

First, stainless steel is a relatively costly material. Cory uses .050-inch thick metal — a 0.10-inch ply of stainless on each side of a .030-inch core of ordinary steel.

A second element in the manufacturing cost squeeze grows out of the fact that heavy stainless is harder to work with than lighter gauges or than softer metals.

Here are some of the ways that Cory cuts the cost of manufacturing high-quality stainless ware:

1. Develop drawing techniques.
2. Automatic polishing.
3. Use swaged joints and welding.

#### Localized annealing aids drawing and forming

During his development of economical manufacturing techniques for elaborately formed stainless products, H. R. Fischer, plant superintendent of Cory's Nicro Division, has made considerable use of localized induction annealing in combination with severe drawing operations.

The work-hardening properties of chromium-nickel stainless have often made engineers wish for some sort of magic that would let them have a Dr. Jeckyl-Mr. Hyde material in the same deep drawing blank. According to a whimsically stated idea, this magic material would be soft and ductile as

it approaches the draw ring, but strong enough to withstand tremendous tensile stresses in the cup after it passes the draw ring.

Some of this dual-material characteristic is gained by induction annealing a portion of a part between draws. The annealed portion is then soft and ductile enough to stand considerable reduction. The rest of the part retains the high strength and hardness which has been imparted by the previous cold working.

This applies to extremely deep draws and to severe localized forming operations, like the final forming of the "flavor-seal" bead where lids fit on to cooking pans. This is a precision fit that seals in cooking vapors and makes possible the waterless cooking method featured by this line of products.

The photographs show an 8-inch skillet being annealed at its outer rim in preparation for the "flavor-sealing" press operation. A 30kv high-frequency generator is used. The rim is raised to 1600°F and then cools rapidly as soon as the piece is removed.

Substantial cost advantages are achieved by this method in contrast with furnace annealing the entire piece. Very little discoloration or scale is formed, and the piece can go to the draw press without having to be pickled or cleaned.

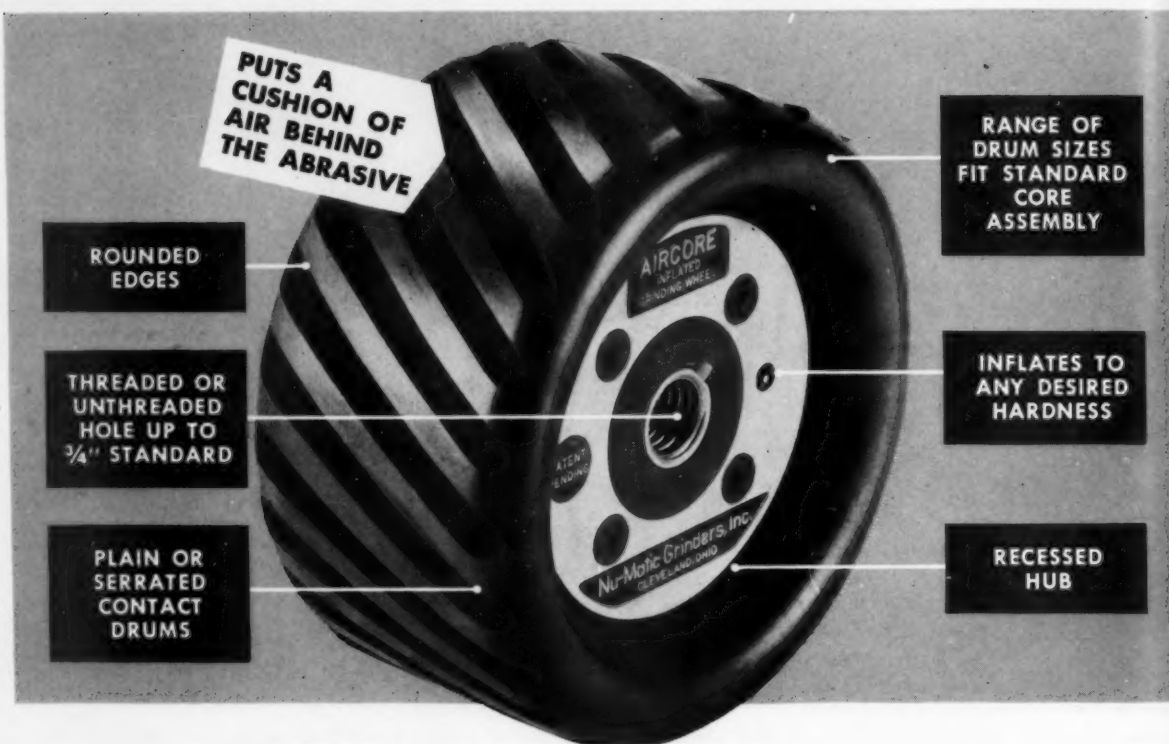




*Press operator is shown with "flavor-sealed" skillet body and die set which is used in conjunction with localized annealing at Cory.*

*Left below: Placing a skillet blank on the induction annealing fixture. Water-cooled conductors from high-frequency generator can be seen at left. The coil is concentrated under the flange radius of the part. A separate localized annealing fixture is set up for each individual job. Right below: Reannealing a piece that has already gone through the forming operation. The smoke comes from the die lubricant.*





## New Aircore Grinding Wheel cuts faster... features interchangeable contact drums

One universal core assembly and a range of contact drum sizes — these are the ingredients for a new line of Nu-Matic Air-Inflated Grinding Wheels. Changing contact drums is like changing from conventional tread tires to snow tread tires on your car. The new Aircore models provide these features:

**FASTER FINISHING**—With an Aircore Grinder, you get up to 3,000% greater abrasive contact area than with hard-wheel grinders. Means a greater area finished with each pass.

**BETTER WORK**—No herringbone patterns. No swirl marks. Aircore Grinder produces a smooth, straight-pattern finish comparable to a hand finish. Rough cutting and blending in one operation.

**INCREASED BELT LIFE**—Users report savings in abrasive costs up to 80%. Fewer grit sizes required in most cases.

**FOLLOWS CONTOURS**—The resilient contact drum shapes itself to the contour of the work surface — combines contouring with fast, smooth cutting.

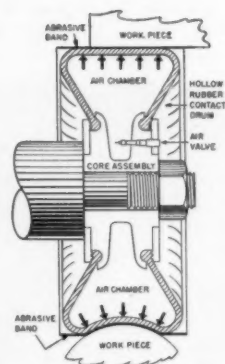
**LIGHT WEIGHT**—The Model 525 weighs only 15 ounces. Size for size the lightest grinding wheel on the market.

**COMPARE AT OUR EXPENSE**—Send for 25-day free trial. Give job requirements and type and size power tool used.

**NU-MATIC GRINDERS, INC.**

8224 Carnegie Ave.

Cleveland 3, Ohio



The Nu-Matic Air-Inflated Grinding Wheel is built like an auto tire — flattens out at point of contact — contours to work surface.



Here you see the large grinding area that an Aircore gives on flat surfaces. A sheet of glass is pushed against an Aircore wheel that has been inflated to 3 pounds pressure.

everybody's favorite  
supermarket



made of  
flat-rolled  
steel

Appliances as well as kitchen equipment like cabinets and sinks need a good *suit of armor*—made of flat-rolled steel—when they're put to the test of normal use.

If you use flat-rolled steel in your products, rely on a specialist—Great Lakes Steel. Our entire organization is devoted to the business of making more and better flat-rolled steel for every application. Many manufacturers have found we have some unique qualifications to help them improve products and reduce costs. We would like the opportunity to work with you on your problems.

Call on our 25 years of specialization in flat-rolled products. Our representative will be glad to discuss your particular needs at your request.

### Great Lakes Steel

Ecorse, Detroit 29, Michigan

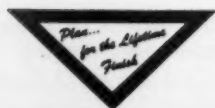
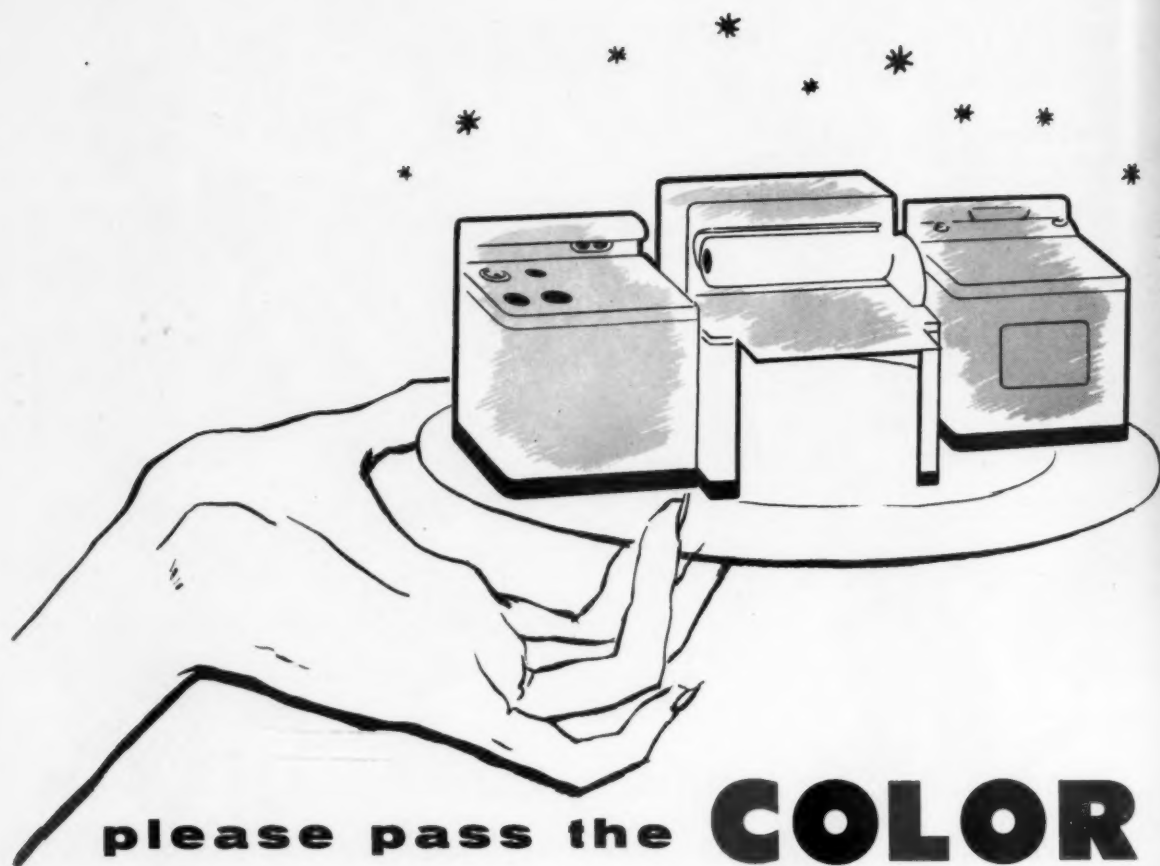
PRODUCER OF H-A-X HIGH-TENSILE STEEL

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**VITREO facilities help you meet the ever - growing demand for porcelain enameled parts by:**

1. Acting as a source for stamping as well as enameling.
2. Enameling stampings of your manufacture.
3. Supplementing your own enameling plant.
4. Possibly saving die costs.
5. Quickly solving your color problems.
6. Keeping transportation costs low. (By operating our own trucks, we can often pick up and deliver at the same time, thereby saving most of the cost of one-way transportation.)

VITREOUS STEEL has pioneered in developing pastel as well as bright colors ever since the introduction of colored titanium enamels! We are now among the few enamellers who have this know-how.

Color is now crowding white as the finish most in demand for kitchen products and we are prepared to meet this demand. Porcelain Enamel Lifetime Finishes are available now in a variety of colors . . . and they won't scratch or fade, because they can't scratch or fade.

**VITREOUS STEEL PRODUCTS CO.**

BOX 1791 • CLEVELAND 5, OHIO • (Factory at Nappanee, Ind.)



*Jean Otis Reinecke*, head of the Chicago product styling firm of Reinecke and Associates, Chicago, is one of the nation's leading industrial designers and possesses a gifted insight into what Mrs. America will buy. A pioneer in the field of industrial design, Reinecke has had over 17 years of active participation in the design field, and hundreds of household products from radios to refrigerators bear his styling imprint.

Many of the products styled by Reinecke have been outstanding sales leaders, such as Toastmaster toasters, Bell & Howell cameras, Scotch Brand tape dispensers, Motorola radios and television sets, Webcor radios, Starck pianos, and Continental scales.

During the past year, he served as president of the Society of Industrial Designers, one of the nation's foremost design organizations made up of leading industrial designers including Dave Chapman, Henry Dreyfuss, Howard Teague, Raymond Lowey, and many others. In October, 1953, he was appointed the first chairman of the board of this organization.



## Industrial designers are breaking the color barrier

PART I

by *Jean Otis Reinecke* • CHAIRMAN OF THE BOARD, SOCIETY OF INDUSTRIAL DESIGNERS



There was a time, not too many years ago, when certain colors had to be applied to specific objects with little or no deviation.

During this color-static era, nine out of ten automobiles were black because black was considered to be the only practical color for a car.

Every barn along the country's highways and byways was painted red and in every village and hamlet there was a "little red school house." Kitchen appliances too were relegated to one color and that was "gleaming white." No manufacturer of ranges

or refrigerators would have dared to change to a soft blue or a pleasant green; white simplified too many problems, and after all, wasn't white the only color for appliances?

Originally, the finish served merely as a protective coat, but today it has a new and just-as-important function — that of improving the appearance of an object. Because of this development, the proper selection of colors is one of the most important facets of industrial design — which is the art of building sales-winning appearance into a product before it goes on the market.

The physical appearance of any object is dependent on two separate,

but closely allied, factors — finish, which is 50 per cent of the appearance, and shape, which is the other 50 per cent. Thus, it can be readily understood how the correct finish can make or break a design; it can mean increased or reduced sales for the manufacturer; it can spell the success or failure of a product.

Nearly all manufacturers have come to realize that color can be the key to increased sales appeal. Color has become increasingly important in our present way of life as evidenced by the great popularity of technicolor movies which are drawing larger audiences than black and white films. Color pages have been steadily grow-



ing in our national magazines and the advent of color television is making almost as big a stir as the introduction of this media itself did.

The ever-growing popularity of plastics during the past ten years has been based more on their wide adaptability to color, perhaps, than any other single factor. Color also is a definite method for the stimulation of human emotions out of which grows the necessary impulse buying and the desire of ownership.

#### **A problem for mass production products**

The current trend toward color has posed a difficult problem in mass production since varying the colors of a line of merchandise could result in an increase in the size of the inventory and therefore, multiplies the risk of unfavorable consumer acceptance. While color has often been the means of increasing sales appeal, it has also, when misapplied, forced retailers to cut prices in order to move slow-moving goods. The right color can enhance a product's appeal; the wrong color can prevent goods from moving at a profit.

Selection of the right color is not an easy task. — it requires expert guidance. And that's where the industrial designer comes in. Part of the difficulty in selecting the right color lies in the often over-looked fact that colors are seldom seen as a part of the object itself.

Our visual impression is nearly always influenced by the environment in which the object is seen. Color seems different when illuminated by daylight, incandescent light or fluorescent light. The color impression one receives when viewing an object is the combination of the object's color and its environment. Since most products are designed within the limited confines of a designer's studio or in a factory atmosphere, the designer cannot know or possibly anticipate all the surroundings in which his product will be used. He must, of necessity, choose colors he knows, through research and experience, will appeal to the average consumer tastes.

#### **Problems of color selection**

The product stylist is faced with two specific problems — color selec-

tion and color specification. Color selection must consider tradition, environmental buying habits and the existing market. The lower the price, the stronger the color must be. This is because lower priced articles are bought primarily on impulse and bright colors are needed to attract attention.

Kitchen utensils usually have red handles — for this is a traditional color preference as established by sales records. Red is an excellent display color — appropriate for low cost items. But try and sell a red kitchen range or washing machine — where the color preference has always been white!

Experience has taught the designer that geographic location is another influence on color preferences; the far West preferring brighter colors as compared to the darker hues so prevalent in the East. The new synthetics too are stimulating a trend toward lighter colors. We now have non-staining materials such as plastic coated fabrics and wallpaper, improved paint finishes and less fugitive colors.

(to be concluded)

OCTOBER • 1954 finish



months of planning, hundreds of of study, innumerable meetings and rances, and years of combined knowl- and experience comprised the prepara- tages before the 1954 Servel refriger- actually went into production. Here, d E. Dailey (standing left), vice ent in charge of product planning errel and one-time industrial design ant on his own, engages in a con- ce with the entire Reinecke and Asso- staff. Jean Otis Reinecke (second right, standing) offers his organiza- thinking on the new Servel models seen in the rear.

The 1954 Servel refrigerator is an example of the application of color to a once sterile-white product. By considering the latest use of color, texture, and materials now being utilized in kitchen furnishings, designer Reinecke was able to create a model which blends in pleasantly with other elements in and around the hub of the home—the kitchen. The main decorative feature of the exterior is the solid copper finish over the freezer unit. This is used in harmony with the trend of copper usage in today's kitchen. The interior of the unit is a soft blue.



Society of Visual Education's new slide pro- is an overt manifestation of the use of color erentiate between different models in one line. igh price model (shown here) is finished in ors with a red plastic nameplate and smooth liecast housing. The lowest priced model is one color with a wrinkled finish. Colors were yed for instantaneous identification of each y price differentiation. There is no obvious ence between the outer design except color. et was designed by Reinecke and Associates.

Interior of the new Cul- ligan automatic water softener has a cheerful metallic blue cover over the mechanism which is accented with chrome and brass trim. Tex- ture clear plastic con- trol panel with silver backing lends a color- ful touch to the unit. It was also designed by Reinecke and Associates.



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FOR

**ATHENS STOVE**

## PERMA-VIEW

*the window  
you can see through  
always!*

*"out of our carton —  
into your door"*



Yes sir, it's as easy as this. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range — to add a sales feature second to none.

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "non-fog" window meets the constantly growing demand for "visible baking."

More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to your range. Write or phone for complete information.

Phone MArket 4-2256

• Athens Stove Works, Inc. uses the PERMA-VIEW window in all of their models which are furnished with a glass window.

# MILLS

**PRODUCTS, INCORPORATED**

**1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN**

DOW CORNING  
CORPORATION

# Silicone News

FOR DESIGN ENGINEERS

## Dependability of Overload Relay Assured with Silicone Fluid

Latest addition to the series of silicone-containing Hydraulic-Magnetic Circuit Breakers developed by the Heinemann Electric Company is the Silic-O-Netic type C Overload Relay. A 400-volt service unit, the Type C resets itself immediately when the circuit fault is corrected.

The Type C Relay combines hydraulic and magnetic action. When an overload occurs, a spring-loaded iron core in a non-magnetic tube filled with Dow Corning 200 silicone fluid is actuated by a solenoid coil. The core travels toward the end of the tube to complete a magnetic circuit. Resistance of the silicone fluid slows core travel providing a time delay inversely proportional to the overload current. Extreme overloads actuate the armature instantly before the core reaches the end of the tube.

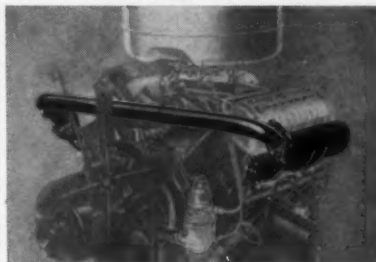
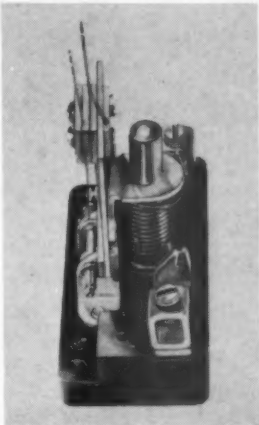
Time delay characteristics are determined by core design and fluid viscosity. Of these,

the easiest and least costly to vary is the choice of a fluid having the proper viscosity. Key to the consistent dependability of the time delay is the fact that the initial viscosity remains constant, even after millions of operations in service.

Unlike organic oils, Dow Corning 200 Fluid retains a relatively constant viscosity over a wide temperature range; it does not thicken or thin out. This important feature plus high resistance to oxidation and gumming helps keep the relay's actuation point unaffected by variations in the ambient temperature.

These same properties are utilized in another type Heinemann relay which is pre-set at the factory for delay intervals of from 1 second to 2 minutes. The delay interval is determined almost

entirely by the viscosity of the Dow Corning 200 Fluid selected. In all these relays hermetic sealing is used to assure cleanliness and freedom from tampering. No. 6



## Silicone Paint Improves; Protects Appearance of Mercury Manifolds

To preserve a quality appearance in keeping with the automobile itself, the exhaust manifolds and crossover connection of all Mercury automobiles are coated with a heat resistant silicone based paint. Formulated by Midland Industrial Finishes of Waukegan, Ill., the coating stays black and glossy despite surface temperatures in the range of 500 F. Compare that with the burnt-brown appearance of conventional manifolds.

First used on the manifolds of the 1953 Lincoln automobile, the silicone finish is expected to last the life of the automobile. No noticeable deterioration has been observed after as much as 100,000 miles.

No additional work is required to apply the silicone paint. It's simply sprayed on the manifolds with conventional production line equipment and baked only 30 minutes at 500 F. No. 8

Dow Corning 6 Compound, a grease-like, non-hardening, rust preventative for ferrous alloy metal parts in delicate mechanisms and fine instruments, provides excellent protection during long time, indoor or outdoor storage. No. 9

## New Silicone Rubber Gum Can Be Sulfur Vulcanized and Blended with Organic Rubbers to Increase Their Stability

Rubbery parts with properties intermediate between those of silicone rubber and organic rubbers can now be produced by compounding with a new silicone polymer that can be vulcanized with sulfur and blended in any proportion with organic rubbers.

Identified as Dow Corning 410 Gum and available now in commercial quantities, this new polymer can be blended with or applied as a protective coating to extend the serviceable temperature limits and the weather resistance of organic rubbers.

Brittle point in the range of  $-70^{\circ}\text{F}$  and usefulness at temperatures up to  $400^{\circ}\text{F}$  can be realized by proper blending. The physical properties of the blend will fall between those of high strength silicone rubber and the organic rubber constituent.

Dow Corning 410 Gum can also be blended

with oil resistant rubbers to increase their stability in contact with hot oil. Such blending also markedly improves the ozone and weather resistance of organic rubber.

Tested in an atmosphere created by an ozone generator, for example, a Buna N type rubber, compounded for test purposes, showed failure cracks in less than 30 minutes. Under the same conditions, a fifty-fifty blend of the same organic elastomer and Dow Corning 410 Gum, compounded with the same fillers and vulcanizer showed no cracks after more than 8 hours.

Priced in the same range as standard silicone rubber gums, Dow Corning 410 Gum is currently available for immediate shipment in commercial quantities. Experimental samples for testing and evaluation are available on request. No. 7

### Design Edition 2

DOW CORNING CORPORATION - Dept. ES-22  
Midland, Michigan

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6 7 8 9

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Canada: Dow Corning Silicones Ltd., Toronto; England: Midland Silicones Ltd., London; France: St. Gobain, Paris

finish OCTOBER • 1954

29





Left: Evaporative components are shown on conveyor leading to washing machine — step in preparing parts for spray painting.

PHOTOS COURTESY SHELL CHEMICAL

## New type resin finish as applied to evaporative coolers

how use of one-coat system eliminated problem of refund losses

by *Vernon F. Rodick* • VICE PRESIDENT, NATIONAL ENGINEERING & MANUFACTURING CO.,  
SEDALIA, MISSOURI.



Refund losses due to interior rusting in our home and industrial evaporative coolers has been a problem of long standing. In

addition to the monetary losses, there was the equally serious problem of maintaining satisfactory dealer and customer relations under these conditions.

After testing many paint formulations under accelerated corrosive conditions, we finally developed a coating capable of resisting the corrosive conditions inherent in the operation of our coolers. This par-

ticular paint was formulated by a supplier and based on a new resin. The performance of this finishing system completely eliminated our refund losses and gave us a product with substantially improved sales appeal.

We first specified this particular finish coat early in 1952. At that time, it was applied only to the internal or tank parts of our coolers. The material was applied with standard nozzle spray guns over a 0.2 mil vinyl "wash primer" to a total film thickness of 0.75 mil. Although the new coating could be cured at room temperature, we employed a six-minute air dry followed by a nine minute

bake at 300°F. in order to meet our production requirements.

### One coat system developed using zinc coated sheet

By the end of 1953, our experience with resin based paints had exceeded our expectations for resistance to corrosion and to the hard water conditions encountered in the Southwestern market. When we moved to our new operation in Sedalia late last year, we decided to standardize on the new system for both the exterior and the interior of our complete line of 14 models. Furthermore, we decided to eliminate the primer and rely on a one-coat metallic tan coat-

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A. CHEN



leaving the washer, flash-dry on way to paint booth.



New type finish is applied by spray guns, attaining a thickness of 3/4 mils.

ing to give us the required corrosion protection.

At the same time, we decided to switch from the cold rolled steel we had been using to a new type of zinc coated sheet, purchased from two different sources. This material is a special hot-dip, zinc-coated sheet steel. The zinc coating takes as severe a draw as does the steel base during our operations, and does not peel or flake as did conventional galvanized sheet or strip. The zinc actually flows with the base metal and gives unbroken zinc protection even after our severest drawing operations. This provides for us the best possible surface for finishing operations.

The combination of a new surface coating and a new metal surface has given us a product improved in appearance, durability and corrosion resistance. The finish is so tough that

we can handle rapidly the various cooler components during assembly without fear of damage through scoring or marring. This helps to reduce reworking and keeps refinishing costs at a minimum.

#### Production cycle

At the start of our finishing cycle, stamped cooler parts arrive from the sheet metal shops and are loaded on the monorail conveyor system at a height of 10 feet. The loading area takes up about 60 feet of the more than 625 feet of conveyor available in the finishing department.

Conveyor speeds range from 7 to 15 fpm depending upon the size and shape of the work going through. Most of our production is in the smaller units of our line, and, as a result, we are usually running at a higher conveyor rate.

Loaded parts move up to a three-stage gas-fired (2800 cfm) washing cabinet which we had designed especially for this project. In the first stage the work receives a two-minute phosphatizing treatment at 160°F., followed by a clear hot water rinse at 160°F. for one minute, and a final two-minute rinse at 180°F. in a mild chromic acid solution. Work pieces then drip dry during their travel to the paint spray booths.

We have standardized our spray guns for all our painting operations, using a three-line recirculating system to the gun head. One line delivers paint to the head at a pump pressure of 15 psi. A second line delivers paint to the work pieces at 60 psi from a group of two 15 hp, double-stage air compressors. The third line serves to keep the paint spray in uni-

to Page 81 →

leaving oven after 9-minute bake at about 300° F.

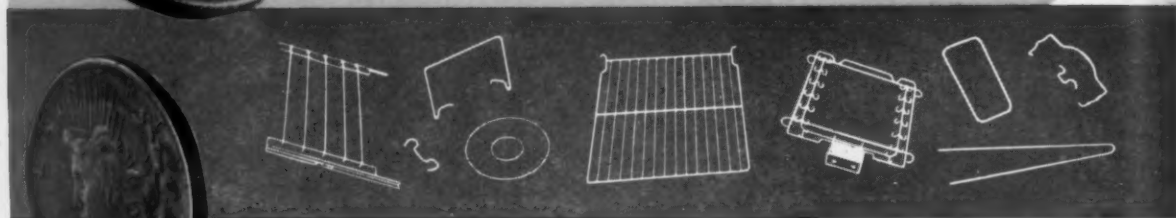


Visual inspection of finished parts precedes transfer to assembly lines.





# Here's one place where your dollar goes further



## RANGES

Runner Assemblies  
Oven Shelves  
Heating Element Supports



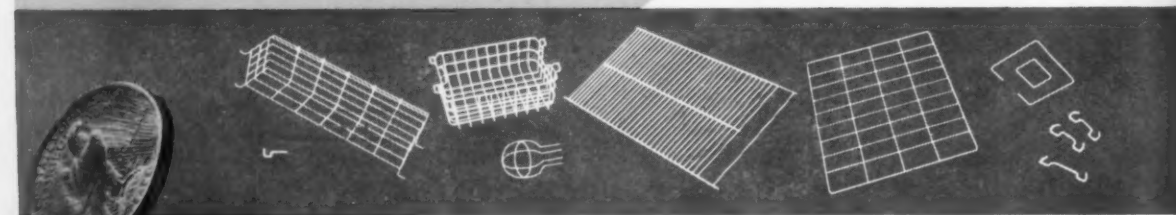
## SPACE HEATERS

Heater Guards  
Frames



## WASHING MACHINES AND DRYERS

Grilles and Guards  
Drying Baskets  
Element Frames



## REFRIGERATORS

Shelving  
Baskets and Trays  
Light Guards  
Door Baskets



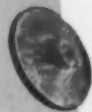
## FREEZERS

Baskets  
Grilles and Guards  
Evaporator Shelves  
Shelves  
Door Shelves



## DISH WASHERS

Glass Racks  
Dish Baskets  
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Where? Union Steel Products Company—of course. Years ago we learned how to build welded-wire shelving, baskets, element frames, grilles and guards, etc., in a way that would solve your design and production headache. It's only a matter of putting the pieces together—but, oh, what a difference our *Know-how* can make in the finished result!

Long service to our customers has enabled us to equip our plant with the most modern production facilities—automatic assembly-line fabrication and welding, complete in-plant finishing by dip or plating.

Most important of all, our engineering service *anticipates* production problems and requirements, then *pre-engineers* their solution.

If it's made of wire, you can get it from Union Steel . . . and you'll get the added benefit of more than fifty years of experience and leadership in the design and fabrication of better, more dependable wire products.

Then, too, you'll have the assurance of quality materials in the hands of skilled craftsmen as well as the protection of USP quality control with 100% inspection.

Why not make your dollar go further? Let USP assist you in planning and producing a part or product that will make your product more efficient.



# UNION STEEL PRODUCTS COMPANY

— Wire Products Division —

Albion, Michigan





## Freezer assembly operations at Amana

presenting pertinent details of assembly operations in plant designed for producing home freezers at a rate in excess of 1000 per day

Part III of a series

**T**WO previous articles covering operations at the plant of Amana Refrigeration, Inc., Amana, Iowa, described the fabrication and finishing of parts for home freezers and air conditioners.

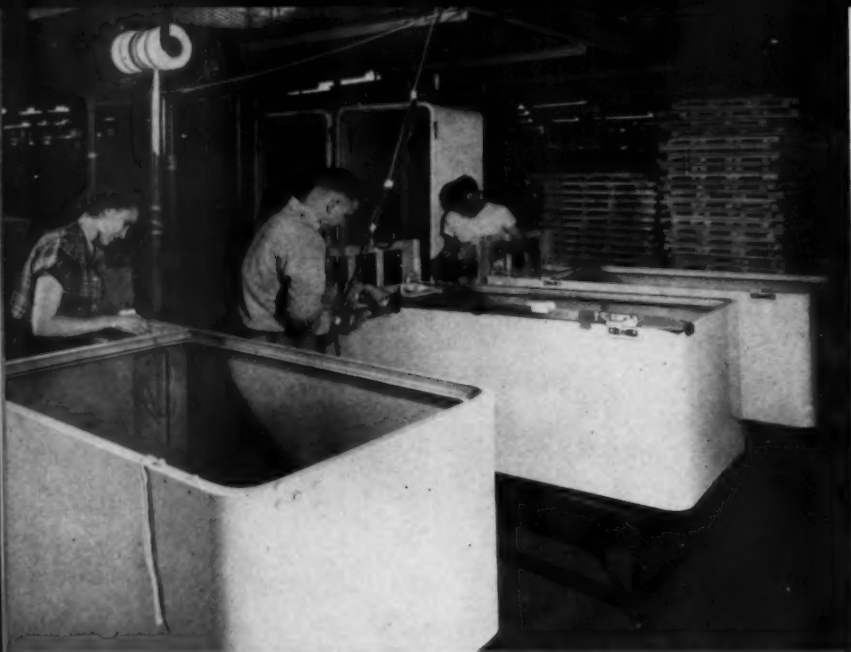
This article presents pertinent details of assembly operations for the finish

Stor-Mor freezer. (Later articles will cover the assembly of air conditioners, plus packaging and shipping for both home freezers and air conditioners.)

### Cabinet assembly

Painted and enameled freezer parts

are delivered by a 3,000-foot overhead conveyor directly to the head of one of two freezer assembly lines. Here, the cabinet is placed on a tilting cart so it can be handled easily. The electrical wiring harness is set in position, then secured in place with tape. The cabinet's adjustable



*On these tilting carts, the electrical wiring harness, hinges, adjustable feet, and the temperature control are installed. This is the first of the cabinet assembly operations.*

feet and the complete temperature control are installed, and a dryer wire, to prevent sweating of the outer case, is set in place and tested. Bearing hinges also are attached.

The cabinet then is bolted to a skid, which ultimately constitutes the bottom of the freezer's shipping crate, and is placed on a mechanized roller conveyor which is the main straight-flow assembly line. Sub-assembly work proceeds on both sides of the main assembly lines, terminating just at the point where the sub-assembly fits into the principal assembly operation.

In the first of a number of steps taken to seal the cabinet against the penetration of moisture or air, all of its joints are "hot sealed" with emulsified asphalt. This odor-free sealer is applied by an electrically-heated, thermostatically-controlled gun.

The cabinet then is lined with thick layers of fiber glass insulation. Next the freezer is laid on its back and the freezer liner is inserted, and more insulation is added.

#### **Liner assembly**

Freezer liners, key to Amana's "contact freezing," are made in a



*Cabinet is sealed against the passage of moisture or air by "hot sealing" with emulsified asphalt. All joints are covered.*

separate department that is divided into these three sections: (1) tubing fabrication, (2) plate welding, and (3) main liner assembly.

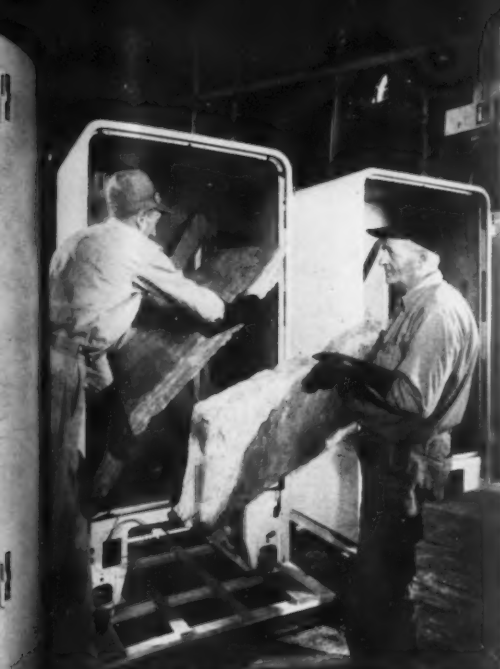
In the tubing fabrication section, 20 types of coiled tubing — copper, copper-coated steel, and aluminum — are processed. They are unwound and cut into the various sizes needed — to connect the various stages of the freezer's refrigeration system and to serve as freezing coils. At every point in this operation, the dehydrated tubing is rubber-capped to prevent the entrance of moisture into the system.

*Doors are assembled on belt conveyor paralleling main assembly line. In foreground, the door's wiring harness is secured in position. Further down, latch mechanism and escutcheon are attached.*



*After fiber glass insulation is added, an adjusting rod, which makes possible the securing of a perfect fit between the door and the freezer cabinet, is attached over the thick insulation.*





ge of the freezer cabinet is insulated with thick emul blankets of laminar-type fiber glass. Next the ed. aluminum liner is inserted in the cabinet.

In another area, the heat exchanger is made on a specially-designed machine that solders the capillary and suction tubes together in automatic 35-second cycles. At another point, a nine-foot long aluminum coil is bent around a special jig, forming the freezing coil for the top and bottom of the liner.

Aluminum shelves are converted into freezing plates by having tubing welded to them. Then aluminum trim is bolted to the shelves, for strength and decoration.

Now the liner itself is assembled. A flat sheet of "stucco-embossed"

aluminum is bent on a special machine to form the U-shaped wrapper for the liner. The wrapper is now placed on a knee-high, powered conveyor where the shelves are bolted in place. Then the top and bottom of the liner are metal stitched to the liner. The tubing between the shelves is Heliarc welded together. The liner is completed as the exchanger tubing is welded in place.

Next the liners are charged with refrigerant and then leak-tested (four at a time) in a fresh air booth to check the sealing of the liner tubing. The completed liners are delivered to

the main freezer assembly lines, just at the point where they are placed in the outer cabinets.

Once installed in the cabinet, the liner is held firmly in position by plastic breaker strips, set in place along the liner's outer edges. The lower sides of the breaker strips have been treated with an asbestos-filled mastic sealer, again to bar the passage of air and moisture.

The freezer now passes over the evacuation and charging pit, a 30-yard long concrete pit, deep enough so workers can stand in it without stooping, and comfortably install the

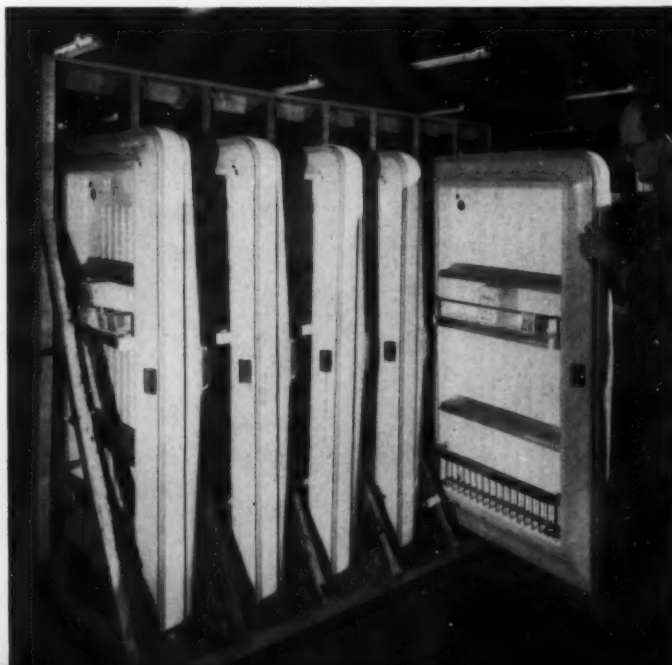


The liner is firmly secured to the freezer cabinet in this operation. Plastic breaker strips are set in place along the liner's outer edges, then machine-screwed to the liner and the cabinet.

which mic breaker frame for the upright freezer's Stor-Mor door, door and gasket, is fastened to the outer door. This frame is made from high-impact polystyrene.



The completed doors are moved to the main assembly lines in o of these specially-constructed handling carts, which are padded prevent marring of the door's finish.







*Here compressor-condensor units are installed in upright freezers. The unit is now ready for evacuation and charging. Note that this pit is constructed so that work can be done conveniently at the lower area of the freezer.*



*Here the entire refrigeration system is evacuated for seven minutes before being charged with refrigerant.*

compressor unit at the bottom of the freezer.

The wiring harness is connected to the refrigeration unit's motor. All tubing is fitted and the liner assembly is connected to the compressor, so the system can be evacuated. By silver soldering, the suction line of the liner assembly is connected to compressor; and the straight of the liner's tubing is connected and joined to the condenser unit.

Now the entire refrigeration system — condenser, compressor, and tubing — is evacuated for seven minutes, at a manifold pressure of 40 microns absolute P. Three cabinets are evacuated at one time.

After the joints are crimped, pinched off and brazed, the units are charged with refrigerant by an operator using a push-button automatic charging cylinder.

Now to make certain all condensing unit joints are perfect, and that none of the refrigerant is leaking, the unit is electronically leak-tested in a special booth that is supplied with fresh, outside air. The super-sensitive leak test probe, which resembles a gun, will detect a leak that would total one ounce of refrigerant in 40 years!

A leak can be detected audibly by interrupting the steady signal omitted by the testing device. Only units

passing the leak test are passed on to the next stage of the assembly operation.

Now fiber glass is packed around the breaker strips to complete the insulation.

A green plastic breaker frame is set in place. The door latch is applied and the cabinet is virtually complete — except for the door. The cabinet moves to this final assembly operation, and the Stor-Mor door is hung in position. It is fitted to the cabinet by means of a special adjusting rod built into the door.

The door seal is checked by pulling through a thin metal strip. If it passes through too easily, sufficient



*Left: The two elements of the heat exchanger, the capillary and suction line, are joined in this operation. After the operator sets the two pieces in position, the machine automatically bonds the components with soft solder. Below: Freezing coils for top and bottom of liners are formed here. The operator bends a 9-foot aluminum tube around a jig to form the coils.*





*The plastic breaker frame, made of impact polystyrene, is attached to the freezer.*

adjustments must be made.

#### Door assembly

Freezer doors are assembled on a line which parallels the main assembly lines. The outer door is placed on a waist-high belt conveyor, that moves at a speed of 54 feet an hour. Workers on both sides of the conveyor install the door wiring harness and seal it; insert the latch mechanism; attach the front escutcheon, and secure it with spring steel fasteners.

Plastic blocks are attached at two corners of the door, to space the inner



*The Stor-Mor door is hung on nylon bearing hinges. Now, only the door light needs to be connected.*

and outer doors, to serve as thermal barriers, and to hold the door's adjusting rod.

Thick insulation is inserted. Then the adjusting rod is placed diagonally on the insulation, connected to the blocks. This rod is adjusted later to make possible a perfect fit between door and cabinet.

Then the steel inner door assembly is added. This inner door is already equipped with shelves, racks and trays. More insulation is added. A plastic breaker frame, with rubber gasket attached to its outer edge, is attached to the outer flange of the



*Final assembly operation is attaching the lower door to the freezer, covering the condensing unit.*

door. Now the door is complete.

On the main assembly line, two important tests are administered after the door has been hung on the cabinet. To check that the insulation of the freezer's electrical system won't break down, 900 volts of electricity are applied—much more than the freezer would even encounter in normal operation. This is called the high potential test.

Then to test the overall effectiveness of the cabinet system's sealing, the air-test is performed. When only a small quantity of air must be intro-

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test for possible leaks (the third given each unit) is performed on the final inspection line.

*Production freezers, selected at random from the assembly lines, are given exhaustive tests in the engineering laboratory. Crated production models are also given tests which simulate conditions encountered in transit.*



**A. O. SMITH CORPORATION**  
*almost doubles milling  
 capacity without adding  
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**COORS**  
**Alumina Ceramic  
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Workmen charge a pebble mill at the A. O. Smith Corporation—where milling time was reduced 46%—from 5,800 revolutions to 3,100 by using Coors Alumina Ceramic Grinding Balls.

The use of Coors High Density Grinding Balls, according to actual experience in enameling plants, will produce these results:

1. Permit you to obtain greater output per mill.
2. Reduce cost of balls because of much lower ball loss due to wear.
3. Increase the life of your porcelain mill linings when mills are properly charged.

**A. O. SMITH CORP. EXPERIENCE SHOWS:**

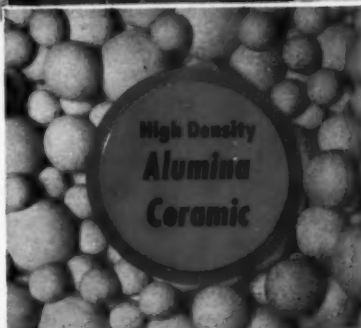
"We find that to produce the proper fineness, 3,100 revolutions per batch are required with your Alumina Balls [in a 5'x6' mill]. With the previously used balls, 5,800 revolutions were required for the same fineness, or nearly twice the time requirement.

"This improvement in grinding cycle time means that we can almost double our productive capacity without adding additional mills. Besides the cost and difficulty of obtaining new mills, the floor space saving effected for increasing the capacity is often important...

"...31 batches of glass-lined slip have been ground in this mill with no additional [Coors Alumina] balls being added for wear. Our previous records reveal that with conventional balls, we were having to add 12 pounds of balls per charge for ball loss during each cycle of grinding."

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- No Chipping or Cracking
- Pure White—No Color Contamination
- Smooth Surfaces—Easy Cleaning



**COORS PORCELAIN COMPANY**  
 GOLDEN, COLORADO

National sales representatives...LSP Industrial Ceramics,  
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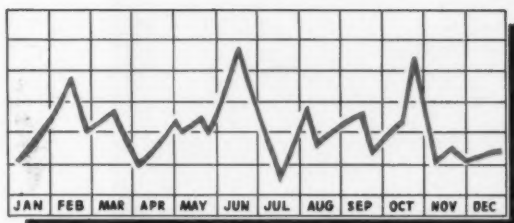
Sole Agent for the Enameling Industry...East of the Rocky Mountains  
 Chicago Vitreous Enamel Product Co., 1427 South 55th Court,  
 Cicero 50, Illinois.

California sales representative...Melvin L. Jantz Company,  
 5078 Alhambra Ave., Los Angeles 32, California.

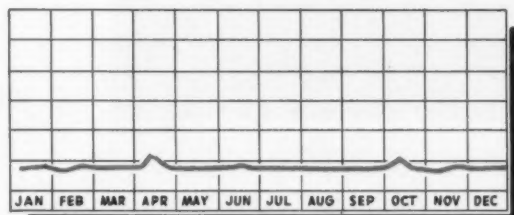


# IF YOUR PORCELAIN ENAMEL REJECT CHART

**LOOKS LIKE THIS**



**INSTEAD OF THIS**



## Maybe We Can Help You!



We have been operating our own enameling plant for almost 40 years and we know what rejects are and what they can do to your costs. That is one reason that we have been making frits that keep rejects to a minimum both in our own plant and in the plants of our customers.

If your rejects are running too high, give us a call and we will send one of our plant-tested service engineers to your plant to help you.

Remember, Ing-Rich frits can and will reduce rejects and rejects cost money.

### INGRAM-RICHARDSON, INC.

OFFICES, LABORATORIES AND PLANT • FRANKFORT, INDIANA



*Above: Here, in Cameo's new modern laboratory, a research technician places a sample of 16 ga. aluminized steel coated with a low-temperature frit in a laboratory furnace for a sample run.*

*Below: Spraying a low-temperature ground coat on four of some 60,000 electromagnet pole pieces punched from 16 ga. aluminized steel. Coating thicknesses of 0.001 in. on the sides, 0.002 in. on the edges, were used.*



## Cameo is enameling

*by Gilbert C. VERNER*



Successful research in the application of porcelain enamel to any specific material usually pays double-barreled dividends

—increased utility of that material under certain conditions, and better appearance when and if decorative values are important.

These double benefits are strikingly evident in the results of the six months of research recently conducted at California Metal Enameling Company, Los Angeles, in the application of a low temperature frit to "aluminized" steel sheet material. Furthermore, these benefits seem to have been amplified by the possibilities of low-cost production uncovered during the course of the work.

Aluminized low-carbon steel sheet material is coated with about 0.001-inch of pure aluminum on all faces. This aluminum coating alone imparts greatly improved corrosion and heat resistance to the base material. The porcelain enamel coating technique worked out at Cameo not only improves this corrosion and heat resistance, but adds greatly to its appearance, thus adapting it to many appliance applications where good appearance is a mandatory requirement.

### Technique similar to enameling aluminum

As might be expected, the aluminum coating on the steel requires that enameling techniques be used similar to the techniques employed in enameling either pure aluminum or the various aluminum alloys. A low temperature frit, fired at 1000° F., is used. This firing temperature is well below the critical temperature of the base metal. The frit is similar to that used on aluminum, and is

# enluminized steel

C. V. EDITOR

ground very fine prior to application, with only a trace remaining on a 325-mesh screen.

The aluminized steel is prepared for enameling in a buffer silicate type of solution. This solution is kept well on the basic side, with pH 12.8 about right. Immediately following cleaning, the material is given a hot-water rinse at about 160° F. No pickling is required.

## Coating laminated pole pieces for electrical insulation

In the one large production job accomplished to date—the enameling of some 60,000 laminated pole pieces for a huge electromagnet to minimize core eddy currents and provide electrical insulation between the laminations—the frit was applied to the pole pieces in a thickness of 0.001-inch on both sides and 0.002-inch on the edges. Previous laboratory tests had substantiated the insulation (electrical) value of these coating thicknesses. Firing of the pole pieces was accomplished in a specially-built furnace heated with gas-fired radiant tubes. Firing time varied between 8 and 15 minutes.

In the laboratory work preceding this first big production job, numerous tests were conducted to determine the overall quality, adherence and flexibility of these coatings applied on aluminized steel. It was determined that the frit being used provided excellent edge coverage, thus overcoming a basic porcelain enameling problem. Also, due to the relatively low firing temperatures employed, the frit can be applied on one side only of the aluminized sheet stock, then fired without causing sheet warpage.

The coatings obtained were very chip-resistant. Drop weight tests proved that a better bond was obtained than is obtainable between porcelain enamel and stainless steel.

finish OCTOBER • 1954



Finish

Above: Adherence plus! A sharp bend in this porcelain enameled 16 ga. aluminized sheet steel test panel fails to produce a coating fracture or rupture.

Flexibility of the coatings is comparable to the flexibility of coatings on aluminum sheet material.

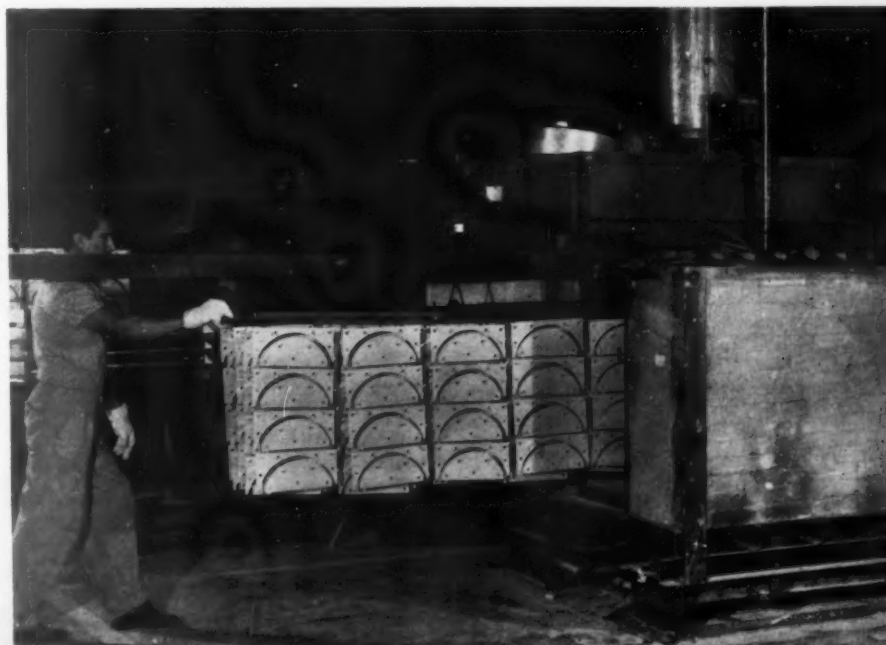
The frit used is available in the many various colors employed in appliance enameling. The total cost of the porcelain enameled aluminized steel is substantially less than the total cost of porcelain enameled aluminum sheet material.

## Cameo suggests appliance applications

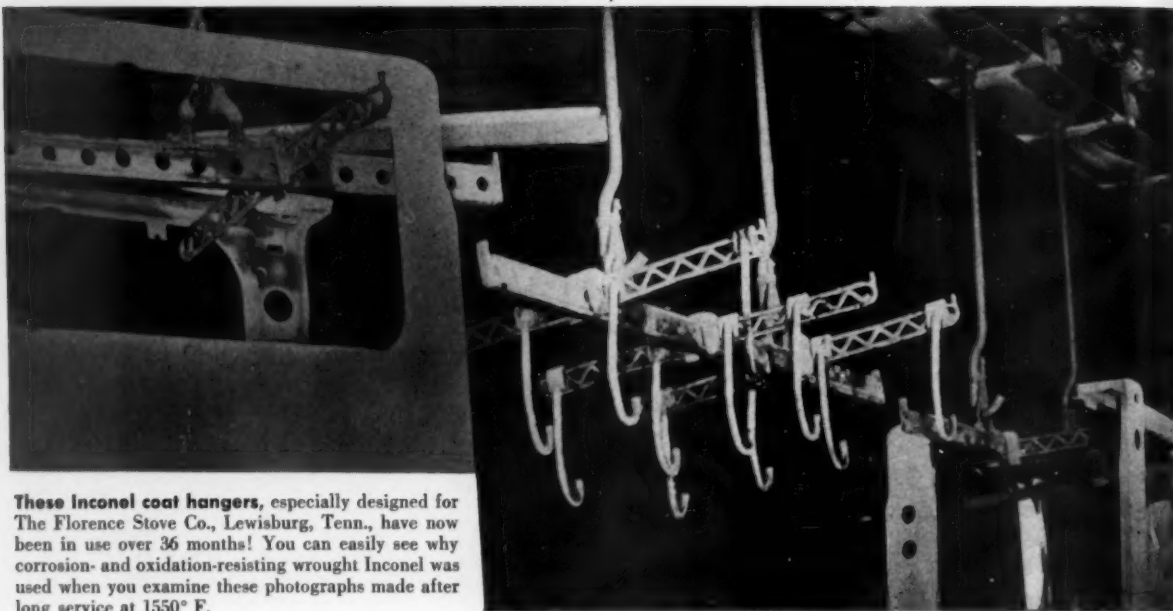
Hugh Penton, Cameo's factory

manager, points out that good edge coverage and the possibilities of enameling one side of the material only without warpage, has great possibilities in many types of appliance production. In producing back panels for stoves, architectural panels, heater grills, air conditioning units, and similar products, one-side enameling will provide the necessary exterior appearance, while the aluminized coating will provide sufficient corrosion protection on the surfaces that are not enameled.

Below: Inserting a rack of sprayed electromagnet pole pieces in specially-built furnace heated by gas-fired radiant tubes.







These Inconel coat hangers, especially designed for The Florence Stove Co., Lewisburg, Tenn., have now been in use over 36 months! You can easily see why corrosion- and oxidation-resisting wrought Inconel was used when you examine these photographs made after long service at 1550° F.

## Inconel Coat Hangers

*... 36 Months  
with no time out*

Are you troubled with bulky and heavy burning tools that require extra maintenance and give a short service life?

If you are, take a look at these lightweight Inconel® fixtures. They were designed for THE FLORENCE STOVE COMPANY, Lewisburg, Tenn.

These fixtures have been in continuous use for over 36 months operating at 1550° F. and they are still in excellent condition.

They have required a minimum amount of maintenance. And what's more, fuel consumption has been *lowered* because Inconel's strength at elevated temperatures permitted the design of thin sections resulting in lightweight tools.

Enamel spoilage also has been reduced. For Inconel resists both corrosion and oxidation. And its tightly adhering oxide film resists scaling and spalling.

Inconel is ductile and readily fabricated. And Inconel welded joints are as strong and heat-resisting as the alloy itself. This enables you to design for efficient furnace use and still have all the strength and corrosion resistance you need.

Are you troubled with a high temperature equipment problem in your operation?

Inco's High Temperature Engineers would like to work with you to find a solution.

Possibly they already have the answer among the accumulated data they have acquired through research on similar problems.

To help them get started, send for a copy of the High Temperature Work Sheet. It is designed to help you outline your problem.

The International Nickel Company, Inc.  
67 Wall Street New York 5, N. Y.



### Inco Nickel Alloys

# INCONEL...for long life at high temperatures

# THE HOME LAUNDRY HAS CHANGED SOME

## SINCE THE

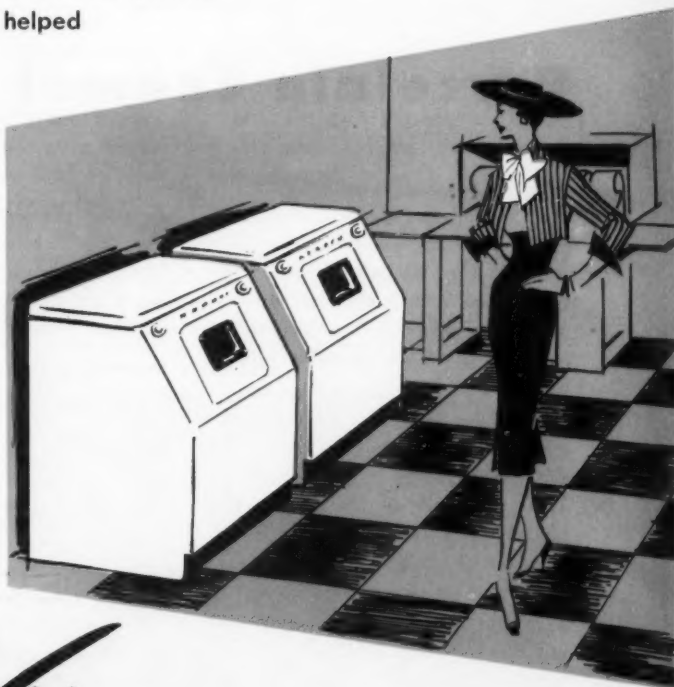
# GOOD OLD DAYS



Doing the wash in the "good old days" was really a back-breaking never-ending job. But outstanding product engineering by manufacturers of home laundry appliances has transformed this household drudgery into sheer luxury.

Through the years, since the first all steel washing machine tub was successfully enameled, Chicago Vit has contributed many major advancements in enamel composition and processing techniques . . . advancements which have helped make porcelain enamel the standard finish for top quality washers and dryers. Newly developed alkali-resisting frits for the home laundry industry are the most recent Chicago Vit contribution that is helping home laundry appliance manufacturers build more sales appeal into their products.

If you haven't yet found out how you can produce easier-to-sell home laundry appliances with Chicago Vit's new alkali-resisting frits, it will pay you to do so. Your Chicago Vit representative will gladly give you all the facts.



# Chicago Vitreous CORPORATION

1425 South 55th Court • Cicero 50, Illinois



## Porcelain Enamel Institute annual forum

**M**ORE than 200 persons from the porcelain enameling industry attended the 16th annual Shop Practice Forum held at the University of Illinois, September 8-10, under the sponsorship of the Porcelain Enamel Institute.

Acting as host to this year's meeting was the University's Department of Ceramic Engineering. Dr. A. I. Andrews, head of the department, and Dr. A. L. Friedberg handled arrangements for the forum.

For the second straight year, the program was developed under the able chairmanship of W. H. Pfeiffer, of the Frigidaire Division of General Motors Corp.

All sessions had capacity or near-

capacity attendance, indicating that the Shop Practice Forum Committee had done an excellent job in preparing a program to hold the attention of those present.

### Preventing delayed defects

One highlight of the forum was an address by J. E. Eckel, industry consultant. In his talk, "The Cause, The Effect and the Cure—of Delayed Defects", Eckel stated that oxygen is the element which causes delayed defects, while the evolution of hydrogen gas is but an effect.

If oxygen is kept under control in the production of sheet at the steel mill, then the enameler will experience no trouble with delayed defects, but such steel necessarily costs more.

Eckel told of a new process which can be used to prepare steel sheet—after the sheet has been properly prepared for enameling. The sheets are degasified by heating in a hydrogen-bearing atmosphere.

The degasification by decarburizing performs two important functions. It prevents black specking and removes objectionable foreign deposits carried over from the cleaning and pickling operations.

Conventional enameling sheet, irrespective of reboiling characteristics, treated in this manner, will result in enameled ware free from black specking in any of its variations, and, with a non-reboiling sheet, freedom from delayed defects, stated Eckel.





## Forum plant men

The following are only a few highlights of the many other interesting and educational reports presented.

### INDUSTRY REPORTS

The opening session consisted of a series of concise five-minute reports on the progress and present status of topics of current interest to the enameling industry.

#### Effect of mill additions on abrasion resistance

R. A. Smith, of Murray Corp. of America, reported that this study is only partially completed and that data is too limited to draw definite conclusions. However, the trend of results to date indicate: (1) sodium nitrite, sodium aluminate, potassium

chloride, potassium carbonate, and urea appear to have no effect upon abrasion resistance; (2) potassium nitrate appears to have a definite harmful effect; (3) magnesium carbonate appears to slightly improve abrasion resistance in amounts up to 1/2%; and (4) titania in early tests appeared beneficial, but later tests did not verify these results.

#### Reflective bead enamels

D. C. Bowman, of Chicago Vitreous Corp., reported on the use of materials incorporating small light-reflective glass beads to increase the light-reflecting properties of porcelain enameled signs and markers.

Most work was done with a method which entails coating the fired enamel with an adhesive substance to hold the beads before fusion. Medium sized beads #8 and #10 (40-50 and 50-62 mesh) appear to give the best results.

Although practically any white or light colored porcelain enamel may be used, the enamels which seem to be most effective with reflective glass beads are the high reflectance blue-white titania opacified enamels which fire from 1540° to 1480° F., stated Bowman.

#### Mechanical method for obtaining enamel pick-up

H. S. Saunders, of The O. Hommel Co., reported on a method of determining the pick-up weight of an enamel slip which has been used in their laboratory for three years. The method is used to dip varying size test plates up to 12 inches square.

"We incorporated an air cylinder (22-inch piston travel), with air pressure gages, and simply hook the plate to the moving piston of the air cylinder. Any speed of withdrawal can be obtained by changing the air pressure used to operate the cylinder. Rubber gaskets and springs are used to prevent a jar or shock at the completion of air cylinder travel," Saunders pointed out.

#### Addition of water to furnace atmosphere

In the absence of R. P. McCook, of Geo. D. Roper Corp., D. G. Bennett, of the University of Illinois, read McCook's report which was concerned with the effect of moisture in enamel furnace atmosphere on low temperature titanium whites.

It was reported that "pitting" would result whenever the dew point in the furnace atmosphere dropped below 30, but would never occur above this point. Experiments were made with steam, and it was found that good results were obtained by injecting a small amount of live steam continuously into the burning zone of the furnace.

None of the higher firing titanium whites showed pitting of this type under any conditions, said the report.

#### Use of organic dyes as a spraying aid

Dr. Robert Patrick, of Pemco Corp., presented this report which was prepared by G. D. Martin, also of Pemco.


It was pointed out that the use of

to Page 48 →

*An overseas visitor at the forum was Bernt-Erik Kockum (left), of Kockums Enamel Works, Ronneby, Sweden, shown here with Dr. A. I. Andrews, head of the Department of Ceramic Engineering at the University of Illinois.*

Finishfoto





A good porcelain enamel  
finish assures gleaming beauty,  
ease of cleaning and freedom  
from nicks and scratches...

... Especially when it's applied  
on a good enameling base\* that  
promotes maximum adhesion between  
the steel and the enameling frit.

PORCELAIN ENAMEL ON

*USS Vitrenamel* \*  
BASE

USS

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA GENEVA STEEL DIVISION, SAN FRANCISCO  
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.  
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

# Blazing New Trails Costs Money...

but it has "made" Modern Porcelain-enameling!

By conservative estimates, Ferro has invested more than *ten million dollars* to bring porcelain enameling to where it is today. Since 1920, a substantial part of income has gone into research, product development, engineering, and new or improved

facilities—all to the end that porcelain enamels would serve better, and in more fields, and at consistently lower applied cost to users.

We at Ferro are still at this job, as is evidenced by the following:

## Research

Major projects here are *one-coat enamels* (including a white, direct on steel) and *lower-temperature enamels* (down to 950° F.). Development of these could revolutionize the industry, just as Ferro's introduction of Titanium Frits did a few years ago by reducing the thickness of P. E. finishes more than 50%.

## Engineering

*Automation* is more than a word in Ferro's Engineering Division. The experience gained in building most (85%) of the modern porcelain-enameling facilities of the world gives them a rare insight on further cost-reduction possibilities, some of which are already proving out in industry.

## Products

Ferro's introduction of "flake" frits is but the first step in giving its customers the ultimate in better, *completely uniform* products made to exacting specifications. The next steps (still very much "under wraps") should be even more revolutionary and save users millions of dollars.

## Facilities

All three of Ferro's domestic plants, and many of its foreign subsidiaries, are now equipped to furnish our customers with "flake" frits produced with modern continuous smelters. A new plant is also nearing completion in South Africa, making *fourteen* in all serving the porcelain-enameling industry.

## Technical Service

Ferro's Field Men are more than trouble shooters. Through broad experience, and frequent contact with your organizations, they often can suggest profitable short cuts to better porcelain enameling. Behind them, of course, are all the research and engineering resources of Ferro

## Industry Education

Having pioneered the industry's first textbooks, trade publications and trade schools, Ferro continues to work in the field of education with Technical Bulletins, the *International Enamelist*, Modern Handbooks and Technical Competitions for students.

## In Summary

Ferro never forgets that it is you, our customers, who enable us to continue this broad service to the industry through your encouragement and your purchases of Ferro Products and Services. Together, we've come a long way. Together, we'll blaze new trails in making porcelain enamel even more useful and versatile.



**FERRO CORPORATION**

4150 East 56th Street • Cleveland 5, Ohio





**Processing methods panel — first part —** J. L. McLaughlin (chairman), *finish*; Paul Cecil, *Seaporcel Metals*; Joe Baker, *International Harvester*; and Marcel Pouilly, *Illinois Spray & Equipment*.

→ from Page 45

approximately 1 gram of organic dyes to 100 pounds of titania white frit has been very beneficial in increasing the apparent covering power of the liquid enamel, and thereby effective-

ly reducing application weights. Fired thickness reductions of 1 to 1.5 mils have been made with the dye additions.

The use of a dye similar in color to that being produced has been



**Processing methods — second part —** W. H. Pfeiffer (forum chairman), *Frigidaire*; E. E. Howe (panel chairman), *Chicago Vitreous*; D. R. Goetchius, *Ferro*; and G. A. Lux, *Oakite Products*.

#### finishfotos

**Practical tests —** G. H. Spencer-Strong (chairman), *Pemco*; James H. Giles, *PEI research associate, National Bureau of Standards*; John T. Roberts, *Crane*; and E. C. Aydelott, *Murray*.



found of value, particularly in the ivory, buff and sandstone color family. The Color of the milled liquids of these families is not as opaque as the blues, greens, pinks and browns and may need to be emphasized.

Dyes in the red family, such as congo red, scarlet moo or saframine A, seem to work best in intensifying these milled colors. Other dyes, such as the greens and blues, muddy the liquid color and are not of assistance.

#### PROCESSING METHODS

One session on processing methods was presided over by J. L. McLaughlin, of *finish*, and chairman of the PEI Process Development Committee.

Three members of that Committee presented reports on different types of enamel slip application.

Paul S. Cecil, of *Seaporcel Metals, Inc.*, discussed the "Practical Aspects of Dipping". He suggested that enamellers take a closer look at their present operations to see where they can take advantage of this very economical method of coating.

Joseph J. Baker, of *International Harvester Co.*, conducted a question-and-answer session on "Data-Controlled Spraying."

Some of the information brought out includes: (1) controlled spraying can be profitable in a small shop, (2) carbon ring air-compressor air will permit spraying at lower gravities, (3) decrease in fluid flow results in thinning out of center of spray pattern, (4) humidity has a definite effect on spraying, and contributes to "sagging"; (5) a .086 fluid tip has been found to be the most satisfactory for high production and efficiency.

M. L. Pouilly, of *Illinois Spray & Equipment Co.*, reported on recent progress in "Electrostatic Spraying of Porcelain Enamel." He stated there are at least three enamel plant installations of electrostatic spray equipment.

Progress in this field has been slow but gratifying, said Pouilly, who added that a leading manufacturer of laundry equipment was readying an electrostatic spraying set-up for pro-

duction-line spraying of tops for automatic washers.

### COLOR IN APPLIANCES

One of the most interesting sessions was that devoted to color. Chairman of the session was J. B. Willis, of Pemco Corp.

Dana Chase, editor of *finish*, pointed out that editors of leading women's home magazines are educating their readers to the importance of a "living kitchen" idea which implies, without question, the use of color in the kitchen — as contrasted with "laboratory white."

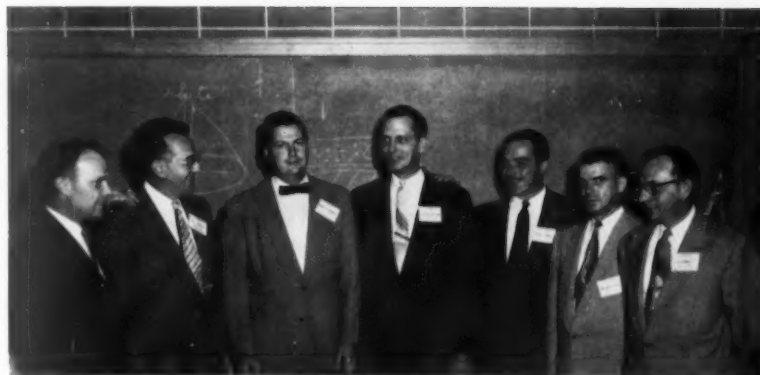
Dr. Ralph L. Cook, of the University of Illinois, followed with an interesting discussion on "Coloramics" in which he presented a scientific explanation of color. Color slides were used to help explain color phenomenon.

E. R. Bullard, of B. F. Drakenfeld & Co., Inc., reported on "How to Choose the Proper Materials for Your Color Production." Covered in his detailed report were the color effects available by various processes, the methods now in use to produce colors in enamels (smelted-in colors and oxide mill additions), a resume of the raw materials, general calcining temperatures and processing of color oxides, and the selection of the particular enamel frit for use with oxides to obtain a specific result.

Dr. R. F. Patrick, of Pemco Corp., discussed the "Use of Instruments in Color Control." He stated that two steps in color specification are: (1) specification of color standard, and (2) specification of color tolerance limits based on both the end use requirements and the variations due to steps in production processes.

"Mass Production of Colored Appliances" was the subject of a report by John Verneti and Robert J. Baker, of the Frigidaire Division of General Motors Corp.

Throughout this report, presented by Baker, it was evident that the successful production of colored porcelain appliances depends on the following items: (1) proper selection of materials, (2) careful milling and color matching, (3) prevention of



**Color** — J. B. Willis (chairman), Pemco; R. J. Baker, Frigidaire; R. F. Patrick, Pemco; E. R. Bullard, Drakenfeld; Dana Chase, *finish*; Dr. R. L. Cook, University of Illinois; and John Verneti, Frigidaire.

contamination during milling and application, (4) properly controlled application and firing, (5) proper scheduling and careful assembly, and (6) good housekeeping.

It was pointed out that the frits

used in colored porcelain production at Frigidaire have all been titanium enamels. Divided into three classifications they are: high opacity frit and low opacity frits (both with added oxides), and tinted frits.



**One-coat white** — A. L. Friedberg, University of Illinois; J. C. Eckel, consultant; J. F. Matejczyk (chairman); Robert Hlivak, Ferro; and M. E. McHardy, Hussman Refrigerator.

### finishfotos

**What's new in industry** — half of panel — J. J. Svec, Ceramic Industry; H. V. Penton, Cameo; M. J. Bozsini, Ferro; R. A. Smith, Murray; Clark Hutchison, Ingram-Richardson; and J. R. Crandall, Bureau of Standards.



# WEAN COMBINATION SLITTING AND SHEARING LINE REDUCES PRODUCTION COSTS FOR LYON METAL PRODUCTS

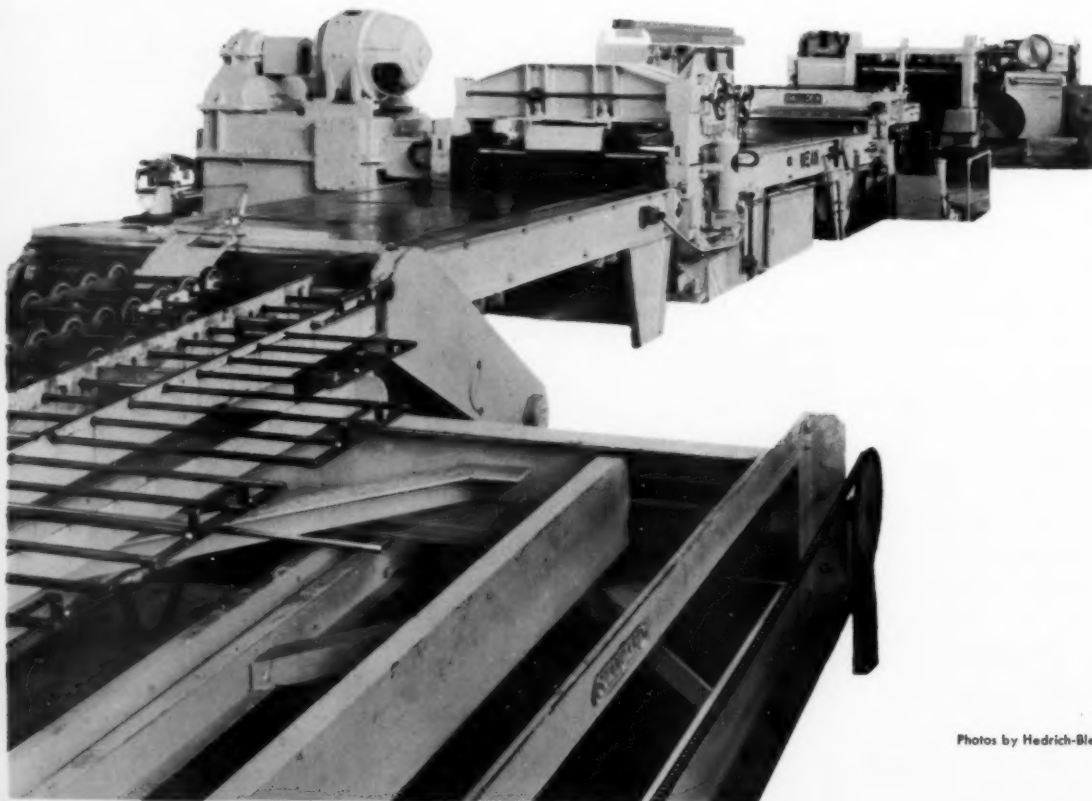


J. B. O'Connor

***"We've noted savings made in raw material inventory; greater flexibility of inventory and improved service in our fabricating departments..."***

To combat rising costs and meet increasing competition leading manufacturers in every field are giving modern production machinery a thorough going over.

Such was the case at Lyon Metal Products, Aurora, Illinois and York, Pa., one of the nations leading producers of sheet steel products. Months ago Lyon officials began to position themselves for the competition they knew to be inevitable. They reviewed their entire operation — studied every possible means of increasing production while curbing costs.



Photos by Hedrich-Blessing, Chicago



That's where Wean Equipment came into the picture. Wean knew their high production Slitting and Shearing Line was a natural for people like Lyon. They showed Lyon the sizable savings possible by buying coil stock directly from the mill, slitting and shearing to width and length desired. Lyon officials checked other Wean lines at work, cutting to resquared tolerances at 100 cuts or 200 feet-per-minute. Wean Equipment engineers pointed out the fact the users of this equipment required less warehousing, less stock control, that users paid less for their steel, had greater flexibility of their entire operation.

Lyon officials listened, compared figures, checked their costs and gave Wean the green light. Recently J. B. O'Connor, an official of Lyon Metal Products checked over the first three months Wean operation. He made the statement:

"We made a sizable saving in floor space, we accomplished a very much worthwhile reduction in our raw material inventory; we have much greater

flexibility in that raw material inventory and perhaps more important, we are giving all of our fabricating departments a much improved service. We have every reason to believe that this will amortize itself in relation to expected returns on money invested."

If you're in the business of manufacturing products requiring various widths and lengths of steel, like Lyon, it will pay you to talk with Wean Equipment — once you get the entire story we're sure you'll agree the savings possible, even for smaller users, make the Wean Line one of the best investments in modern metal working equipment.



EQUIPMENT CORPORATION  
**Wean**

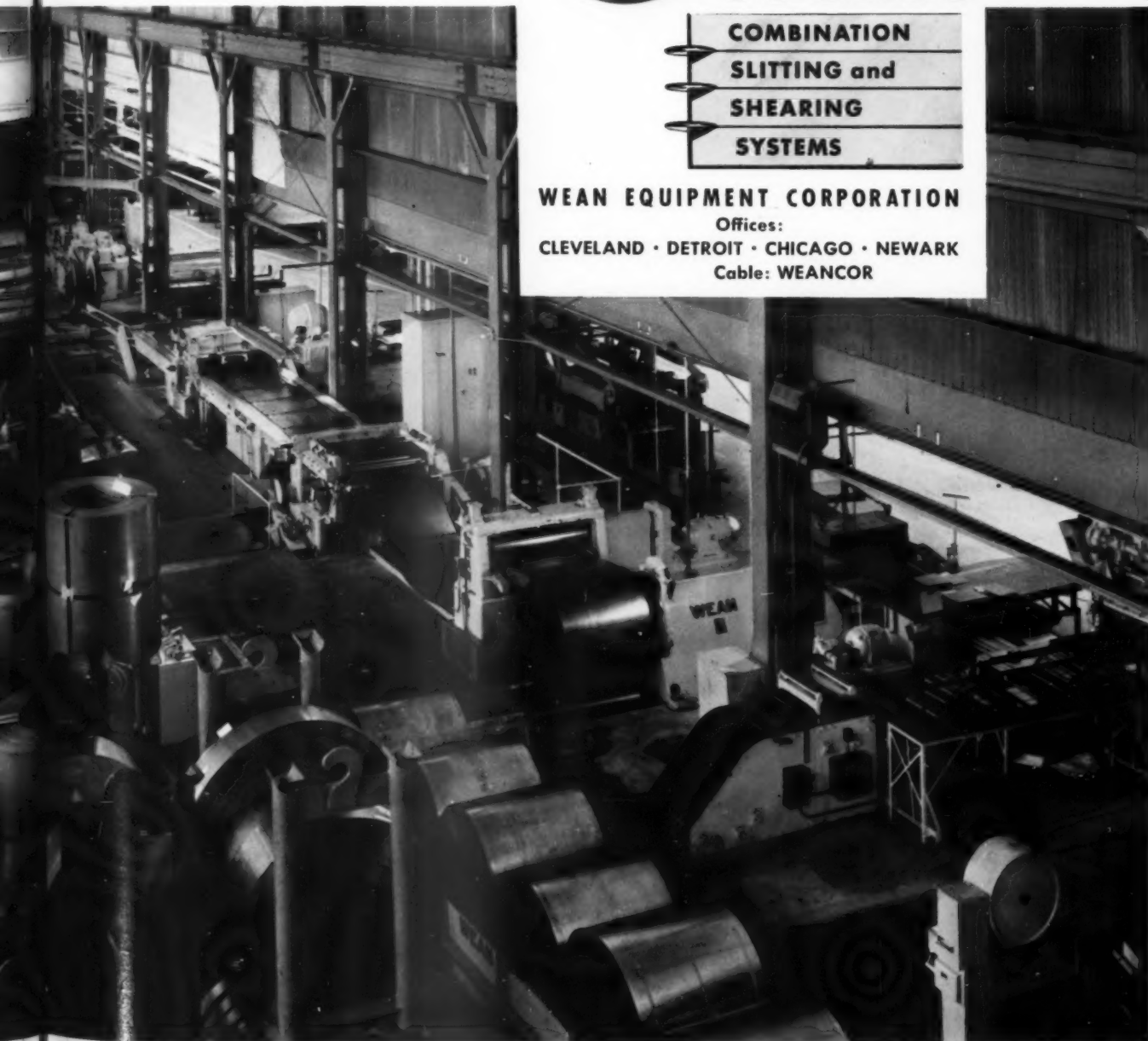
COMBINATION  
SLITTING and  
SHEARING  
SYSTEMS

**WEAN EQUIPMENT CORPORATION**

Offices:

CLEVELAND • DETROIT • CHICAGO • NEWARK

Cable: WEANCOR

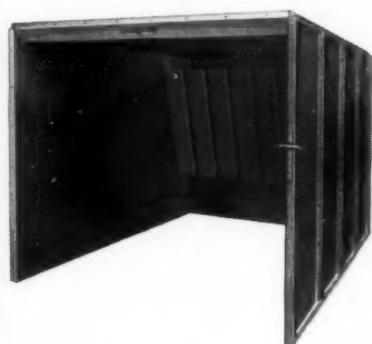




# Save Money on Spray Booths!



Water-Wash Spray Booths



Dry-Type Spray Booths



Leg-Type (also Bench-Type)  
Spray Booths

**You know how standardization saves in your business. Read how you benefit with *standard panel sizes*.**

DeVilbiss Standardized Spray Booths — water wash, dry type, bench or leg type — are based on standard panel sizes.

To you, this brings several immediate time and money savings:

*Easier erection* — panels are accurately sized and punched so that corners and seams fit snugly and bolt together without binding or misalignment. Panels line up exactly and form a smooth, even, interior surface.

*Lower installation costs* — you save on labor because your own crews can easily assemble these booths. Rolled edges with mitered and welded corners reinforce the panels to provide a rigid, sturdy structure that is free standing.

*Easy to convert to meet future needs* — panel type construction

makes it convenient to move, enlarge, rearrange or revamp.

A DeVilbiss representative will gladly give you helpful information on standard or special Spray Booths as well as DeVilbiss Spray Guns, Air Compressors, Hose and Connections. See him today!

**THE DEVILBISS COMPANY**  
Toledo, Ohio

Barrie, Ontario • London, England  
Santa Clara, Calif.

DeVilbiss Spray Booths are manufactured to the standards of the National Board of Fire Underwriters for spray booths as recommended by the National Fire Protection Association.

FOR BETTER SERVICE, BUY

**DEVILBISS**



BRANCH OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE UNITED STATES, CANADA AND THE WORLD

# finish SUGGESTION BOX

## Plastic crucible holds molten metal.

describing heat-resisting properties of  
new silicone compound

A new silicone compound has enabled the plastics industry to climb higher up the thermometer with the heat-resisting properties of the product. Used as a thermo-setting plastic, it extends the usefulness into the 500° - 600°F. temperature range (500°F. for continuous use—600°F. for intermittent use).

A very desirable property of this material is that it permits molding

and shaping at conventional temperatures, and develops its additional refractoriness as it is heated. The appliance and metal products trade are expected to find use for this material in proximity to heat and heat sources, such as burners, switches, elements, wires, motors, ovens, driers, small appliances, etc.

The material, in addition to its thermal properties, is reported to

*Heat-resisting properties of plastic crucible, made from a new silicone compound, is demonstrated in this photo which shows a post card being ignited upon contact with molten metal contained in the crucible.*



finish OCTOBER • 1954

have excellent electrical properties, chemical resistance, low water absorption, and durability under continuous high temperature.

More information on this new silicone compound may be obtained by writing to *finish*.

### KOCH BUILDING NEW PLANT

Koch Refrigerators, Inc., Kansas City, has signed a 25-year lease for a 150,000 sq. ft. plant now under construction in the growing Fairfax Industrial District.

Millard Mayers, chairman, reported that the company expects to occupy the new plant before March 1.

### LEIGH HEADS THATCHER

#### ROOM COOLER DIVISION

Thatcher Furnace Co., Garwood, N.J., has announced the appointment of Stuart B. Leigh as manager of its new summer air conditioning division.

### HOYT STEELE NAMED HEAD

#### OF BENJAMIN ELECTRIC

Hoyt P. Steele, executive vice president, has been elected president of Benjamin Electric Mfg. Co., Des Plaines, Ill., succeeding Walter D. Steele, co-founder of the company in 1901, and president since 1928. The former president will continue as a director.

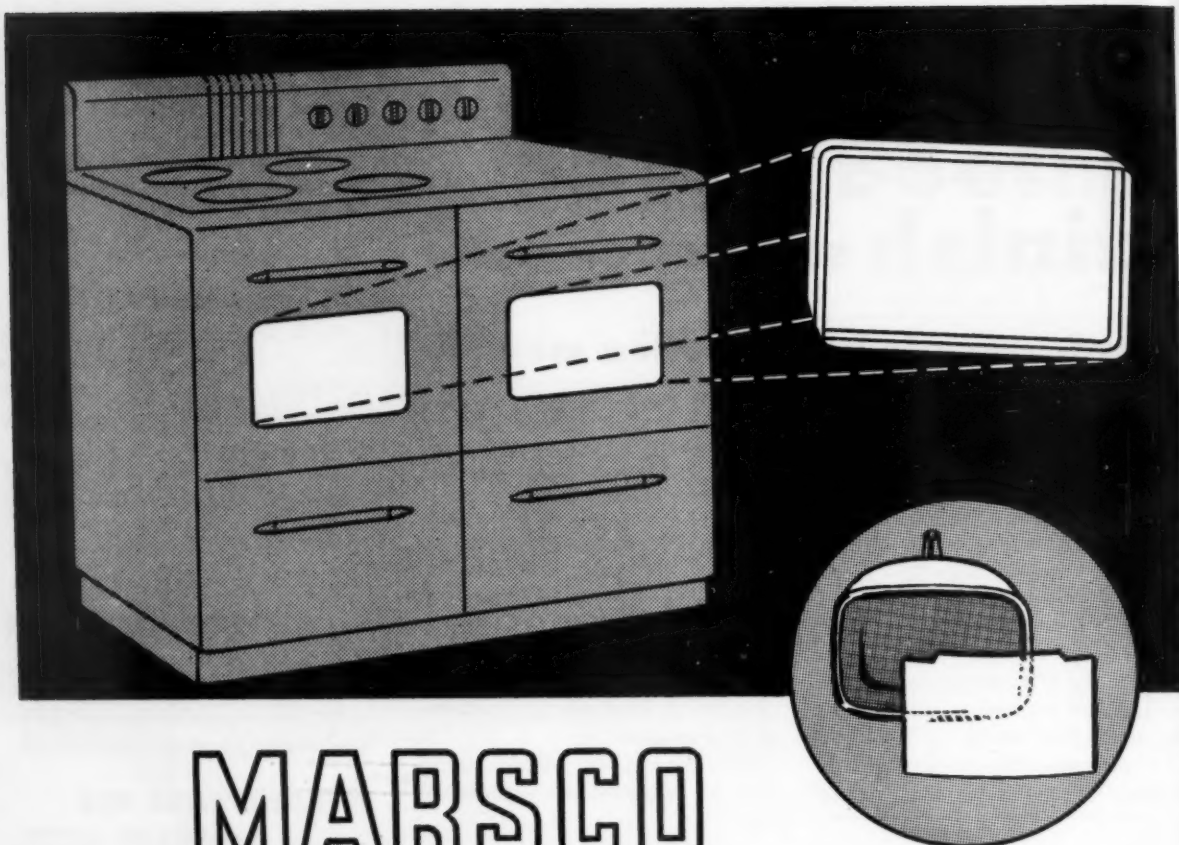
### NORGE BUYS LEESON DIV.

#### AS THOR DROPS FREEZER, RANGE, REFRIGERATOR LINES

Henry C. Buckingham, Thor president, reported that his company has discontinued its built-in electric range, refrigerator and freezer lines. The step was taken so that Thor may concentrate its entire sales and promotion efforts on its new laundry appliances.

The Norge Division of Borg-Warner Corp. has announced the purchase of tools, dies, jigs, and fixtures of Leeson Steel Products, Inc., a division of Thor Corporation. Leeson manufactures built-in ranges. Judson S. Sayre, Norge president, stated the purchase was designed to develop Norge strength in the range market.





# MARSCO

## precision glass parts

### FOR UTILITY AND BEAUTY

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## Bendix puts atomic energy to work in testing laundry appliances

swatches of cloth are impregnated with radioactive soil so that the amount of dirt can be accurately measured with a Geiger counter

A PEACETIME application of atomic energy to reach into the consumer's home was announced by Bendix Home Appliances Division of Avco Mfg. Corp. The company is including the use of radioactive isotopes in testing its own laundry appliances as well as competitors.

Bendix is so sold on the testing method, according to W. A. MacDonough, general manager of distribution and merchandising, that the company has added nuclear testing facilities to its home laundry engineering laboratories now being moved from South Bend to Cincinnati.

"This gives the industry a truly effective method for quickly and completely measuring and comparing automatic washer performance," he said.

The company embarked on the program several months ago when it engaged Nuclear Instrument & Chemical Corp., Chicago, one of the firms authorized by the Atomic Energy Commission to use radioactive materials for research purposes. The Chicago concern devised and conducted exhaustive tests that measured whiteness and brightness, thoroughness of soil removal and consistency of performance in wash after wash.

In the nuclear phase of the testing, swatches of cloth are first impregnated with radioactive soil so that the amount of soil they contain can be accurately measured with a Geiger counter which was especially designed for this purpose.

Hundreds of these swatches were then washed in standard automatic models of Bendix and competitive washers, following precisely each manufacturer's instructions. After washing, the swatches were again measured with the Geiger counter to establish the amount of radioactive soil removed by each wash in each machine.

"The latest Bendix development in tumble-action washing (the Duomatic washer-dryer all-in-one) has now undergone a number of tests

against a series of earlier model Bendix washers," MacDonough explained. "The combined test results show that today's Bendix washers are much improved over original models."

The new technique gives promise that the industry now will be able to enter more effectively test areas where previous testing methods brought indefinite results. These areas include rinsing, extraction, draining and the problem of redepositing of soil after washing.

**Nuclear tests in the home laundry**—Bendix is now using radioactive materials to test the efficiency of automatic washers. The girl in the foreground is placing a contaminated soil swatch into a specially-designed soil locator which transmits impulses for amplification and recording by the Geiger counter at right.



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And throughout the enameling industry hundreds of Rotosprays are on guard for the proper cleaning of milled enamel and to help in the production of the finest quality enamel finishes for washing machines, ranges, refrigerators, sinks, bathtubs — in fact for all types of enameled products.

Check your plant today and make sure that you have the correct number and correct size of Rotospray units to properly prepare your enamel slip at lowest possible cost. Then check with us or with any authorized representative.

An operator hoists Rotospraying equipment into place at the new Westinghouse appliance plant, Columbus, Ohio. →

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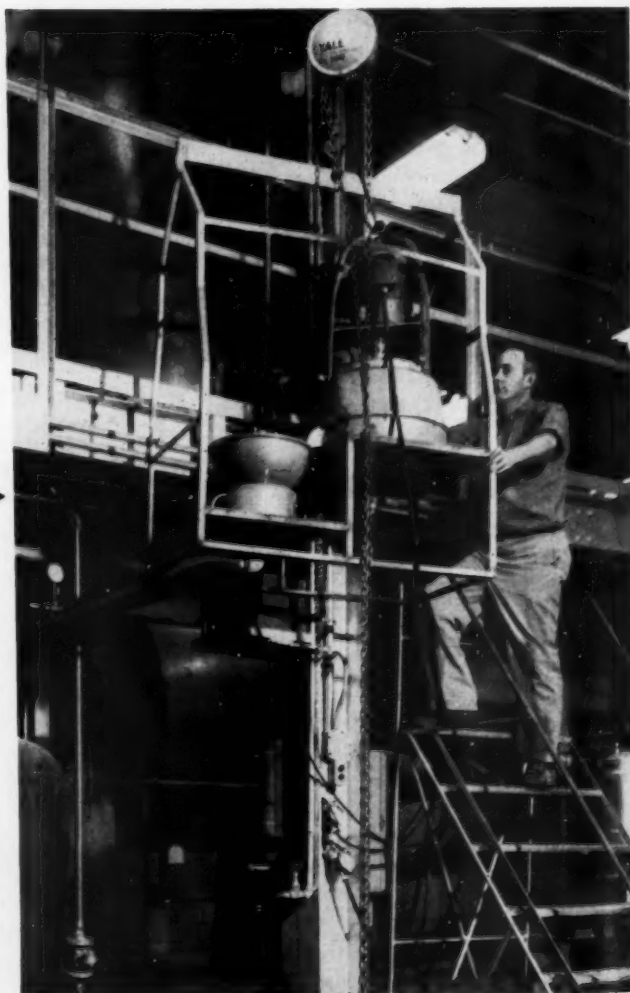
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Modern titania porcelain enamel is unsurpassed as the tough beauty finish for modern sinks, stoves, appliance cabinets and wherever water, heat, household acids and alkalis appear. TITANOX titanium dioxides that do this job best are TITANOX-TG and TITANOX-TG-400 for they are

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Consult with our Technical Service Department for the solution to any problems you may have concerning the formulation of modern porcelain finishes. Titanium Pigment Corporation, 111 Broadway, New York 6, N.Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

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*the brightest name in the finish*

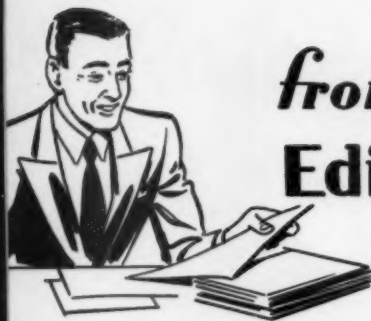
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Subsidiary of NATIONAL LEAD COMPANY

finish OCTOBER • 1954





## *from the* Editor's Mail

# 1944

# 10

We think that your magazine *finish* is tops.

● **Henry Honer**  
President  
Western Stove Company

I think that *finish* magazine is the best available publication that I have seen.

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General Foreman  
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General Motors Corp.

I enjoy *finish* very much. It is timely and newsy.

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We very much appreciate *finish* magazine. I am particularly interested in the Safe Transit section.

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● **Albert E. Duhaime**  
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Landers, Frary & Clark

Each issue of *finish* is passed to four men, and we appreciate its interesting articles.

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Manager, Costs & Budgets  
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I always read *finish* thoroughly, digest its contents to the best of my ability, and am very aware of its high value.

● **John E. Real**  
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I always welcome the publication of your magazine, and the showing of different production lines in various plants.

● **J. O. Buckwalter**  
Engineer  
The Floyd-Wells Company

Enjoy reading your magazine from cover to cover, and sure appreciate being on your mailing list. I wish your publication a continuous success.

● **Richard A. Elsner**  
Supt., Steel Building Div.  
Chicago Vitreous Corporation

I believe that *finish* is one of the best trade magazines I have an opportunity to see. It is a fine piece of work.

● **George E. Mills**  
Assistant Director  
Air-Conditioning & Refrigeration Institute

# ANNIVERSARY YEAR 1954

We secure considerable benefits from the timely information obtained from your publication.

**J. C. Campbell**  
Plant Manager  
Kewaunee Manufacturing Co.

We are very thankful for the *finish* magazine.

**S. J. Callahan**  
Secy. & Dir. of Purchases  
Altorfer Bros. Company

I really appreciate your publication as it is really informative.

**William A. Haverlock**  
Supt. of Assembly & Finishing  
Apex Electrical Manufacturing Co.

Your publication *finish* keeps us informed of activities throughout the industry. Every issue is given a wide distribution within our organization.

**John S. Alter**  
Engineer  
U. S. Steel Corporation

You are doing a fine job with *finish* magazine. Keep it up.

**W. A. Deringer**  
Director, Ceramic-Organic Research  
A. O. Smith Corporation

We look forward to receiving your trade magazine, *finish*, each month. We have been able to cut costs from ideas and equipment. Keep up the good work.

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**LeRoy A. Dimon**  
Supervisor of Product Performance  
The Maytag Company

I surely appreciate your magazine. It keeps me up to date on new developments, technical and otherwise. You are doing a splendid job.

**August W. Meyer**  
Foreman  
General Electric Company

We enjoy your publication very much. It is a useful asset in our operations.

**W. A. Stadler**  
Manager, Technical Services Lab.  
International Business Machines Corp.

Our production division finds *finish* magazine an excellent source for information.

**J. D. Walsh**  
Chief Administrative Branch  
Boston Air Procurement District

Your "Safe Transit Section" contains very interesting information regarding material handling, new methods, crating, shipping and warehousing.

**F. J. Clark**  
Warehouse Manager  
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These represent only a few of hundreds of comments from *finish* readers which we gratefully acknowledge.





This is a typical job shop with a fast-acting furnace. The muffle, of course, is CARBORUNDUM's silicon carbide. The support arches are made of our electric furnace mullite. The life—over three years without a replacement.

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**Point two:** Since it's far easier to transmit heat through our silicon carbide tile, it takes less heat to do so. Operating temperatures are reached with considerably less fuel input.

**Point three:** Rapid heat conductivity also means completely uniform heat distribution. You'll never see any dark areas on a silicon carbide muffle. Just

a bright, uniform glow. Even during a switchover there are no signs of mottling. This, of course, means closer heat control, and top quality enameling.

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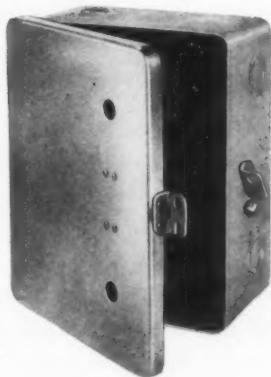
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18 ga. steel one piece draw swivel chair base.



12" rule photographed with chair base to show comparative size.



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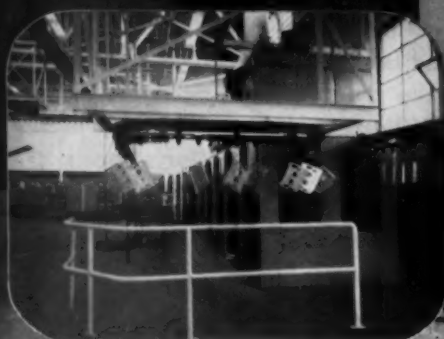
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Among interesting design features: The arrangement of the system around the outer perimeter of the room, leaves the center clear for storage and loading and unloading operations. The zinc chromate dip tank has a refrigeration system to maintain tank temperature at 74° F., reducing evaporation of volatiles.

The system is protected with CO<sub>2</sub> equipment and automatic paint tank dump.

As was done in this installation, Cincinnati Engineers will gladly design equipment to suit your needs. Whatever your cleaning or finishing problems, a survey costs you nothing, may point the way to substantial savings. Write today for booklet: "Finishing Systems."

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# Recent trends in coatings formulation

Part III—conclusion of progress report on new synthetic resin formulation

by *William von Fischer* • HEAD, DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING  
and *Edward G. Bobalek* • ASSOCIATE PROFESSOR OF CHEMISTRY, CASE INSTITUTE  
OF TECHNOLOGY, CLEVELAND, OHIO

WHILE the rate of progress in providing new resins for coatings seems to have reached a plateau, much remains to be done in establishing the best coatings possible from the older types of synthetic resins. Particularly for resin mixtures containing alkyd resins, considerable improvements can be accomplished through a better science of blending resin mixtures. In such instances, the chemical instability of films is less often a limitation than are poor mechanical properties due to incompatibility of resin mixtures. However, where chemical instability is the problem, the formulator still needs to turn to synthetic resin systems unmodified by oils and alkyds. Paralleling the earlier progress report in *finish* (May, June, July, 1952 issues), this part of the review will be concerned with the present status of these less conventional chemically resistant types of finishes.

## SYSTEMS CONTAINING NO DRYING OIL OR ALKYD

### Curing or thermosetting types

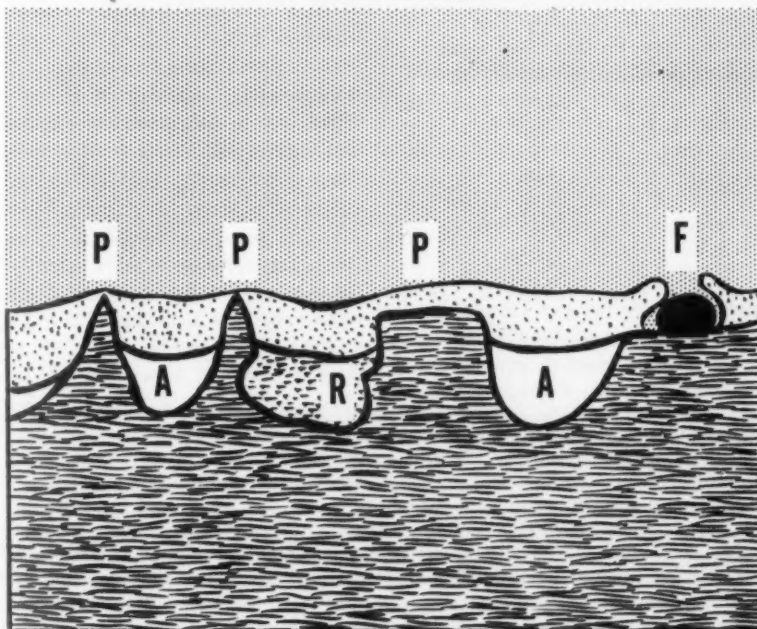
Possibly the major development among this class of resins has been the wide acceptance of epichlorohydrin resins (unmodified by oil and alkyd) in paint formulation. Epoxy resins are now produced in large volume, and the established resin types have found an important place in the design of corrosion-resistant finishes. Epoxy resins are used widely in blends with phenolic or aminoplast resins to produce either baking or room temperature curing finishes. For the latter, the package stability problem still requires a two-package system, with pigment-resin-thinner in one package, and a catalyst solution

comprising the other solution. Mixing is done just before paint application.

The low temperature curing systems lend themselves well to the formulation of mastics that cold-set at room temperature, or at forced-dry conditions of 180°F. or less. In this particular type of usage, furane, vinyl, and neoprene resin mastics provide some competition. The use of synthetic resin mastics is growing in production finishes, particularly

where the limitations of thin films are severe on metals of rough surface texture. (See Figure 6.) This approach represents a radical departure from the film thickness pattern of conventional production finishes. (See Figure 7.) Film thicknesses in the conventional range of less than 5 mils are appropriate mostly where smooth metal surfaces are coated with materials having good adhesion. Smooth surfaces are less practical for many of the best anticorrosive finishes than

Figure 6—Schematic cross-section diagram to illustrate some typical faults of thin films which can be minimized by increasing film thickness. (A) air pockets, (P) poor coverage at sharp projections, (R) non-metallic inclusions that ruin adhesion, (F) a dirt or grease spot causing a pulling away of the film to form a pore of "fisheye". Overall, the film varies considerably in thickness, which condition is conducive to non-homogeneous curing and/or poor mechanical properties. Greater impermeability, more uniform mechanical properties, better abrasion resistance, and more certain coverage of projections is possible with mastic films of 20-200 mils thickness.



are deliberately roughened surfaces. Hence, the mastic idea in paint formulation is a logical necessity with these more poorly adherent finishes, that need be applied over roughened metal.

In actual practice, these cold-setting paints and mastics have tended to be somewhat variable in film properties. The paints during film formation are sensitive to conditions of temperature and humidity. Under unfavorable circumstances, films can cure to a hard finish, of apparently normal appearance, which however is honeycombed with more microscopic porosity and blisters than are normal under more favorable circumstances. Under favorable conditions, the micro-faults are less frequent and films of high density and cohesion are obtained.

This film variability is blamed often on poor mixing of the catalyst or upon extensive degradation of the ready-mixed system in prolonged storage. Although this is sometimes an adequate explanation, recent researches lead us to believe that these factors are sometimes less important than are differences in atmospheric conditions, particularly changes in relative humidity. However, considerable more work need be done before any or all of these problems can be defined more precisely and solved more consistently. Meanwhile, where feasible, it is preferable to use the baking type finishes that require a minimum of curing agent; that is, select formulas to fit the maximum baking temperature that is convenient and economic.

There are yet many pitfalls in translating laboratory results on room temperature, cold-set finishes to production. Where baking is not feasible, then troubles can be minimized if the film thickness can be built to the maximum which economics allow in using the greatest possible number of coats to achieve this thickness. The problem of delamination between coats is not as serious for the room temperature curing finishes as it is for multi-coat baking systems.

For reasons yet to be explained, the low temperature curing types of films seem to perform better than the

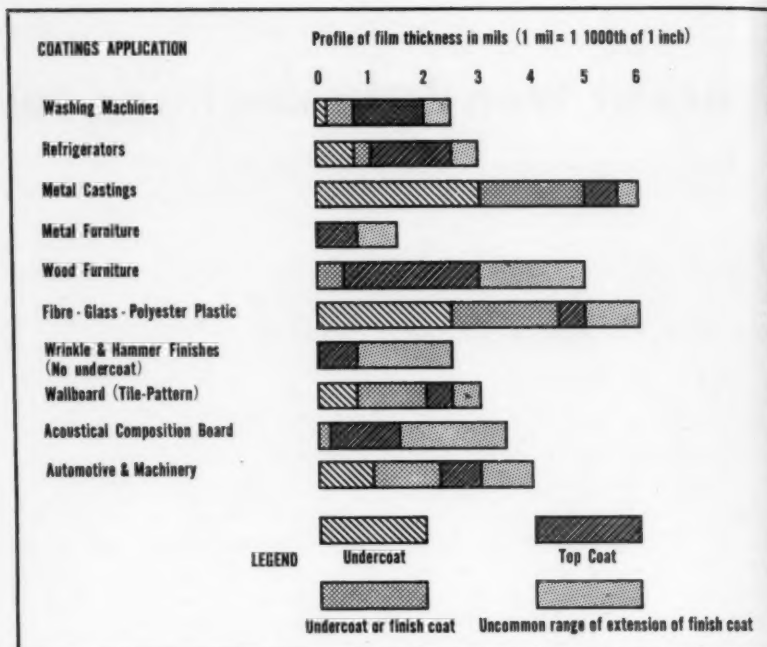


Figure 7 — Film thickness, profile of conventional types of production finishes. By contrast, mastic coatings (not shown here) provide a durable finish coat of 50-300 mils (1 mil = 0.001 inch).

baked-on types where cathodic protection will be used along with the coating. Superposing cathodic protection on coatings of the less permeable baked-on types can result in severe blistering failure of the film. To a lesser extent, the same advantages of air-dried over baked finishes is shown with respect to blistering resistance in deionized water.

As a class these finishes, either air-dried or baked, all have the serious weakness of poor color retention, limited gloss, and some weakness in blistering resistance to deionized and hot water. With respect to the blistering resistance, the formulation trend toward low temperature curing seems to be a step in the right direction. With respect to color and gloss retention, neither baking or air drying types cure very satisfactorily.

Recently, some silicone resins have been introduced which are effective modifiers of phenolic and, possibly, epoxy types of coatings. These finishes seem to have all the virtues of the parent resins along with improved high temperature resistance conferred by the silicone. It is claimed that resistance to water and chemicals is conferred by the silicone modification as well as better resistance to high

temperature embrittlement. Very particularly, these finishes have considerable resistance to chalking in exterior normal or elevated temperatures; this contrasts with the excessive degradation of appearance by chalking that has discouraged the use of many older types of phenolic resin finishes. In common with the older phenolic finishes, the color stability of the silicone-modifications is too poor to allow formulation of permanent white and pastel colors.

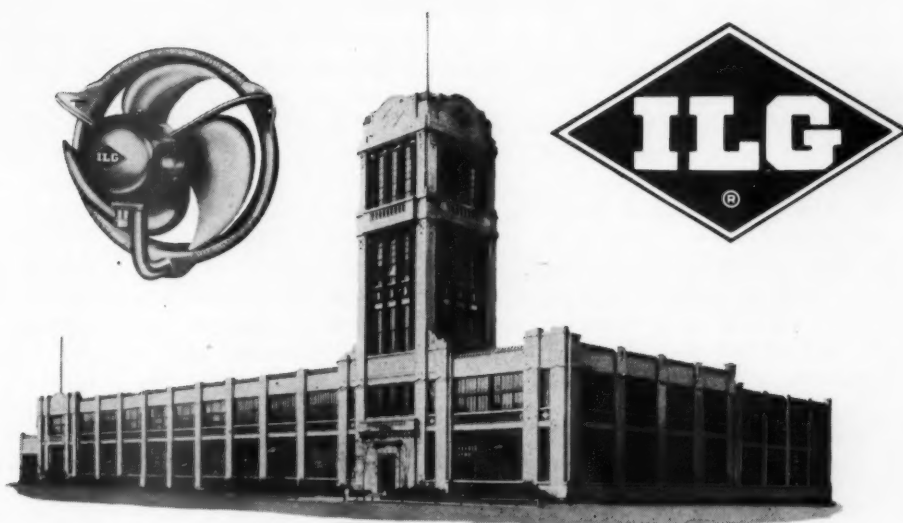
While we are on the subject of silicones, it might be mentioned that the practice of modifying alkyds and other resins with silicones is better established than three years ago because better silicone intermediates have been made available for that purpose — particularly for upgrading the oxidizing (i.e., air drying) types of silicone-alkyd finishes. Also, research has turned up pure silicone resins that can yield flexible, durable films of considerable chemical resistance in shorter baking times at lower temperatures. This group of resins is still experimental, but they merit some new attention by those users of production finishes who may not balk at the cost of the paint, but who find prohibitive the extreme baking sched-

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**"helped us**

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says W. H. PAULSEN, Plant Superintendent  
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ules required for the older 100%-silicone finishes.

In our 1952 report, brief mention was made of allyl and polyester-type resins (oil-free). These are now established in the molding and laminated plastics trade. Except for one moderately successful development (Naugatuck PQL) in the mid 1940's, most attempts to adapt such resins to surface coatings have been a failure. Most of these early studies were directed exclusively to protective finishes for metals. The problem was one of building good adhesion, flexibility, and chemical resistance simultaneously into one product. Either of these difficulties could be solved separately, but not all of them together in the same film. These earlier attempts to establish chemically-resistant metal finishes with the allyl and polyester-type resins was interrupted and eclipsed by the appearance of the epoxy resins and improved alkyd-melamine finishes about 1947. The research was never resumed seriously up to now except in the electrical industry where some such resins found a place in electrical insulation. Certain new developments today suggest that these abandoned experiments may be revived in ex-

plotting the allyl and polyester resins in surface coatings for non-metals.

The growing importance of polyester moldings of structural parts, like automobile bodies, appliance cabinets, etc., creates certain new demands in finishes. The problem of corrosion protection and adhesion to metal — the prime difficulties of original formulations — are no longer important.

Other factors like adhesion to polyester plastic, and physical properties of coatings films that approximate those of the coated surface itself assume greater importance. For example, plastic moldings have a thermal expansion coefficient considerably different from metals. The materials are more subject to mechanical deformation. Also, the plastic substrate is more porous and alters its mechanical properties more on aging. If we coat such surfaces, the coating must be adherent, and be capable of following dimensional changes of the substrate without cracking or developing stresses that result in cracking, checking, or flaking.

Since molded plastics present a rougher and less homogeneous surface, the decorative coatings need be thicker to hide imperfections. The

adhesion must be adequate to prevent blistering and delamination on exposure to water. The coating must be abrasion resistant, preferably more so than the substrate. It should be smooth, of high luster, and good chalk resistance. This combination of mechanical, chemical and decorative properties might be attained with allyl or polyester resin coatings. Because of the chemical similarity of these resins with those in the plastic substrate, it should be easier to accomplish a compatibility of adhesion and mechanical properties. As yet this expectation has been realized only under laboratory conditions.

These possibilities which are theoretically promising have yet to be proved. However, the excellent appearance and durability of decorative properties have already been proved in earlier researches. The fact that such paint systems might be cured at low temperature bakes, or even at room temperature, is a very desirable feature in coatings for non-metals. Probably, however, such finishes will have to be two-package systems, requiring that a catalyst be stored separately from the base paint until just before use. This emphasizes again our earlier comment (Part I of this article) regarding the desirability of further development of application techniques for automatic and fool-proof mixing of liquids at the time of paint application.

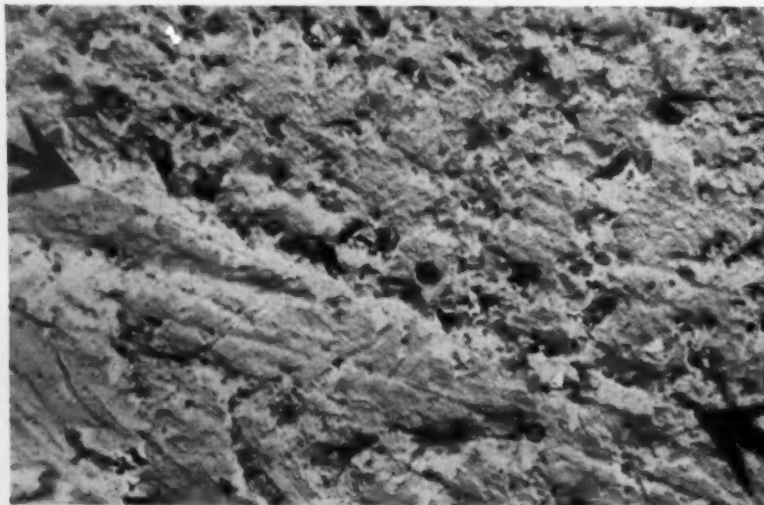
#### Non-curing or thermoplastic types of resin finishes

Regarding this group of resin finishes, not much more can be said that has not already been covered in this and in our 1952 report.

Three years ago we were prone to dismiss the importance of acrylic-type resins because of their high cost. Since then, chemical technology has succeeded in dropping the cost markedly and the trend is toward a further decrease in cost. This has stimulated markedly the interest of coatings formulators, since the resin costs are increasingly more competitive with other vinyls, and the advantages of better adhesion and color retention are apparent. Currently much of the interest is concentrated upon the res-

to Page 82 →

*Figure 8 — Electron micrograph (10000X) of cross-section of adhesion boundary of paint film (above slanted line marked by arrows) to polyester plastic. The superior adhesion shown here by the smooth blending of paint structure into structure of the plastic is an ideal not yet ordinary for commercial paints now used on polyester plastics. Failure to achieve good adhesion of this kind is part of the explanation for failure of common paints on plastic surfaces. (A microscopic section of a poor adhesion cannot be shown because a cross-section cannot be cut without breaking the bond between plastic and paint.)*





# Shock Absorbers



*...are painted with the*  
**RANSBURG NO. 2 PROCESS**  
*using disc-type atomizer*

A leader in the field, The Gabriel Company, Cleveland, uses the Ransburg No. 2 Process to apply the protective coating to its line of shock absorbers which vary in size from 4" to 26" in length.

● Efficiency and production in the finishing of shock absorbers progressively improved at The Gabriel Company, when—over a period of years—they went from dip to Ransburg No. 1 Process, then to the Ransburg No. 2 Process, with the disc-type atomizer.

Efficiency was stepped up measurably when the No. 1 Process of electrostatic spray painting replaced dip method in the application of the protective coating to the completely-assembled shocks.

NOW, with the even-more-efficient No. 2 Process—with disc-type atomizer—Gabriel is painting 1000 pieces per gallon of paint where they formerly finished 350! Production is up, too—almost doubled—jumping from 1000 to nearly 2000 units per hour. In addition to paint savings, they are getting a consistent, high quality finish and an even, protective coating over all areas of the product.

*This is another on-the-job example of what Ransburg No. 2 Process is doing on production lines all over the country. We'd like to talk to you about the possible savings in your finishing department. Or, write for our brochure on Ransburg Electrostatic Painting Processes.*

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**Indianapolis 7, Indiana**

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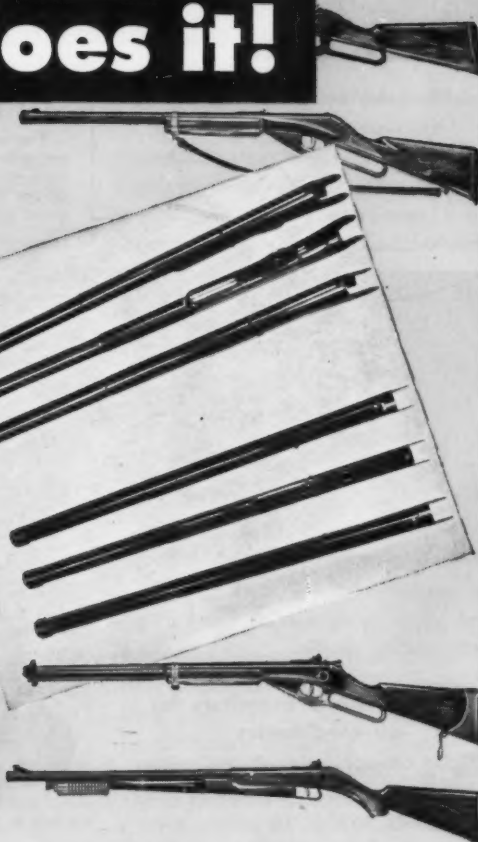
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# EPON<sup>®</sup> RESIN does it!

**DAISY AIR RIFLES**  
get a new, better blue coat  
—with 80% less labor  
and material costs



Epon resin-based enamel has made it possible to conveyorize Daisy's barrel finishing process, resulting in much faster put-through. The enamel was formulated by Egyptian Lacquer Company, South Kearny, N. J., and Lafayette, Indiana.

## HERE'S HOW...

THAT favorite boyhood companion, the Daisy Air Rifle, is sporting a new coat of barrel bluing, more attractive than ever before. It makes these guns look like real firearms. It's news for industry, because the new barrel coating is corrosion resistant, tough and *far less costly*.

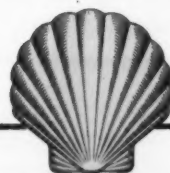
Daisy tried for years to find a suitable paint to replace their costly fused salt bluing-process . . . a paint that is chipproof, weatherproof and capable of forming a thin, hard film on curing. They found the answer, finally, in an Epon resin-based baking enamel.

The Epon enamel is applied by spray coating and—thanks to ease of application—the whole barrel

coating and curing process is now conveyorized, with an 80% over-all saving in finishing costs, including labor and materials.

In almost any surface coating application, users find that Epon resin-based paints and enamels cost less to apply and are more durable. They have excellent adhesion, high resistance to impact and abrasion . . . plus outstanding resistance to moisture, heat and corrosives.

Ask your own paint supplier for Epon resin-based coatings for your particular need . . . or call on our sales offices for names of suppliers near you. Write for the full Epon coatings story, "Planning to Paint a Pyramid?"



### SHELL CHEMICAL CORPORATION

Chemical Partner of  
Industry and Agriculture

380 Madison Avenue  
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Los Angeles • Newark • New York  
San Francisco • St. Louis

#### IN CANADA:

Chemical Division, Shell Oil  
Company of Canada, Limited  
Toronto • Montreal • Vancouver

# New

## Supplies and Equipment

### J-10. Sub-miniature selenium diodes

**New** Four new sub-miniature selenium diodes are rated for a maximum a-c input voltage from 52V to 130V and for maximum



d-c output voltage of 60V to 80V. Each diode is encapsulated within a thermosetting plastic.

### J-11. Two-in-one capacitors for air conditioners

**New** Newly-designed capacitors for air conditioners can individually provide the power factor correction of two single capacitors

### J-12. Protective tape 100% resistant to outdoor exposure

**New** This new paper-backed protective tape is 100% resistant to outdoor exposure for protect-



of the same voltage ratings. Two types of bushing terminals are available: fork terminals and quick-connect (solderless). The units are available in voltage ratings of 236, 250, 330, and 440 volts a-c with selective microfarad ratings.

### J-13. Flange nuts available with or without self-locking feature

**New** Flange nuts in sizes  $\frac{1}{4}$  through  $\frac{5}{8}$ , with either fine or coarse threads, are available with or without the Gripco self-locking feature. This one-piece combination nut and washer is used as a hold-down nut for motors, compressors, etc.

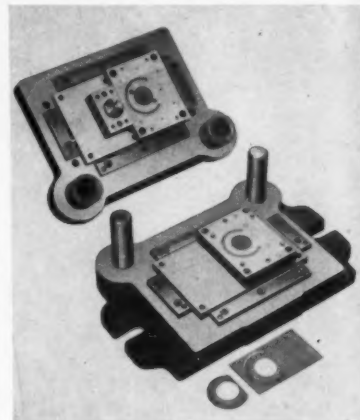


ing smooth surfaces during storage and fabrication. It is believed to be the first tape of its kind to be entirely resistant to outdoor weathering for periods up to six months in duration.

Designed to protect polished and finished surfaces against scratches and die marks during and after fabrication, shipment and storage, the tape features a film-like adhesive that sticks immediately upon contact to different types of metals. (Note: The tape is actually black, but for picture clarity it was retouched white in photo.)

### J-14. New "universal" die set

**New** When used by fabricators of metal products, this new universal die set reduces set-up time, simplifies die making, saves material



and allows greatly reduced storage space for dies.

The new die set is constructed so that a specific sized die plate (up to 8" x 15") fits into the die set in a specifically determined position and then merely bolts down in perfect alignment. The plates on which the dies are built may be removed and stored, and the die set used on a different plate die. Each time the plate die is repositioned, it is in correct alignment.

### J-15. Pencil-type grinder with finger-tip speed control

**New** Photo shows the accessible finger-tip control in the top cap assembly of this pencil-type grinder. The operator is shown open-



ing and dressing gates on a die used to form television knobs.

#### J-16. New paint stripper removes air-dry or baked-on finishes

**New** This new paint stripper is a non-flammable, odorless, solvent-type stripper, formulated so that it effectively removes industrial lacquers, vinyls, phenolics, rubber-base, epoxy and baked-on finishes, as well as maintenance-type protective paints and coatings.

Called Walgarite 10, it is made in a heavy viscosity so that it will adhere to vertical surfaces without sag. It dissolves and wrinkles the finish which can then be flushed off with water, leaving the base surface ready for re-painting.

It can be used on all types of metal, both ferrous and non-ferrous, without any deleterious effect. It does not burn or affect the skin. Spray and dip-type strippers in both flush-off and scrape-off types are available.

#### J-17. Mini-Breaker motor protector with shock-proof reset button.

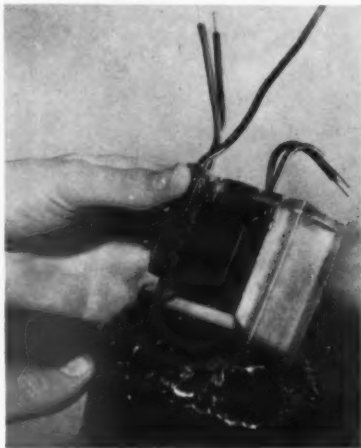
**New** A new lifetime circuit protective device, to fit branch circuits of corresponding 4, 4½, 5, 5½, 6, 6¼ and 7½ amp ratings, fits cut-out base wired to any motor or electrical equipment.

It features a shock-proof reset button which restores service within 10 seconds. Built-in time lag handles temporary starting loads and line surges. It is 100% trip-free, and is self-enclosed in a special tamper-proof insulating case.



#### J-18. Low-cost plastisol molds for electronic assemblies

**New** Production runs of as many as 500 electronic assemblies, at a mold cost of about \$10, are made possible by a new flexible mold method.

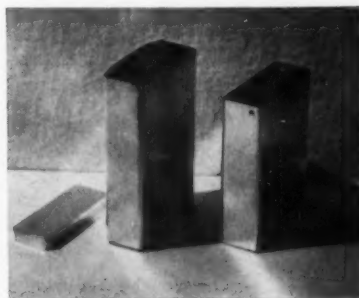


A plastisol is poured around the model in a suitable container, and cured at 350° F for 15-20 minutes. The master mold can then be popped out of the flexible mold leaving a cavity into which the assembly is fitted. A low temperature curing formulation is poured into the space between the assembly and mold walls,

and allowed to gel for 1-3 hours. A slow after-bake at low temperature hardens the embedment so that it can be withdrawn from the flexible mold.

#### J-20. Impact extruded magnesium components now available

**New** At left is magnesium blank from which finished product on right was impact extruded. A single stroke of the press produced



the 1⅜" x 4" x 6½" component (center) with sidewall thickness of .020" and bottom thickness of .032". Only secondary operations required were trimming to 5⅝" length and punching two mounting holes.

Impact extruded components are also available in aluminum, lead, zinc, tin, copper, or the alpha brasses.

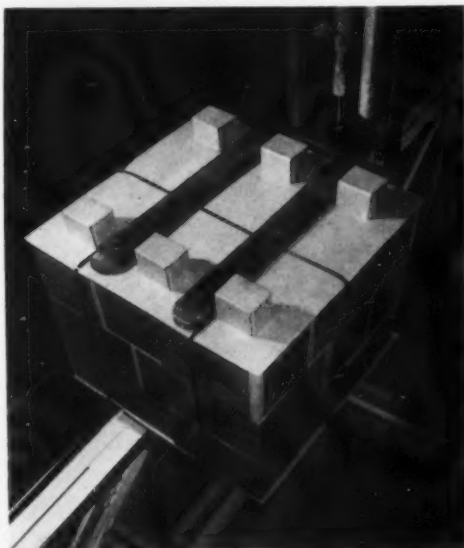
#### J-19. Expendable pallets for use in lift truck operations

**New** This new expendable pallet is ideal for materials handling operations on a lift truck. They are strong (1500 to 2000 lbs. compression test per post), but weigh only 6 lbs.

The pallets are delivered in knock-down form, and consist of a deck and appropriate number of posts, depending on the load to be carried. The posts are quickly assembled in a simple folding operation, and are fastened to the deck with an ordinary stapling machine. Assembly can be completed in about 3 minutes. Pallets can be disassembled for storage.

Standard deck size is 40" x 48", but the new pallets may be made in any size.

Construction permits fork truck entrance and vertical strapping from all sides.





## New Industrial Literature

### 110. Catalog and free samples on nameplates, trim, escutcheons

**New** Catalog and samples on decorative nameplates, trim and escutcheons for home appliances are available upon written request. The catalog is especially designed for product engineers of companies manufacturing home appliances.

### 111. Industrial rubber catalog

**New** A new edition of a catalog of rubber products for industry covers V-belts, transmission belts, conveyor belts, all types of hose, molded products. It outlines a new revolutionary drive which combines the simplicity of flat felts and the grip of V-belts. The catalog is illus-

trated with product and installation photos, and is organized for quick reference.

### 113. Using infra-red to cut costs

**New** A new brochure includes technical facts and case histories on how the use of infra-red ovens is helping cut production costs. It is entitled "How Thousands of Plants Cut Costs."

### 114. "How to save time and money when you buy washers"

**New** 16 pages of helpful information and pictures on the manufacture and availability of metal and fiber washers, both standard and

### 112. Sound movie on packaging includes case histories

**New** An 11-minute sound movie, entitled "Package for Profit," showing stapling machines operating in actual installations on the packaging lines of appliances and other fabricated and finished metal products.

The movie camera takes the viewer into plants where retractable anvil package stapling equipment is being used. Factual case histories show how to cut packaging costs and transit

losses. The movie is loaned free upon request.



**FINISH**  
York Street at Park Avenue  
Elmhurst, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_

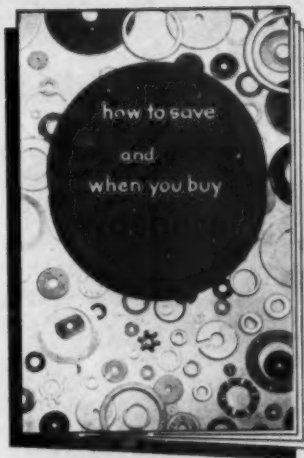
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Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Company Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



special, are included in this booklet. It contains useful data on general washer characteristics, tolerances, and facilities for meeting individual requirements. It lists standard washers carried in stock, and gives existing die sizes for the production of more than 30,000 types and sizes of washers.

### 115. New 340-page catalog on materials handling equipment

**New** This new 340-page standard products catalog, providing easy and rapid selection of Link-Belt materials handling equip-



ment, includes a section covering conveyor components which gives a comprehensive listing of products for screw conveyors, belt conveyors, oscillating conveyors and bucket elevators. A new ball bearing trolley is featured in section on trolley conveyor components.

**8'0" Stevenson  
Roller Bearing Type Mill  
*being lined with*  
**McDANEL  
High Density Brick****



McDanel Super High Density Brick is much harder and tougher than regular vitreous porcelain mill lining brick, and is therefore more resistant to shock and to abrasion. Installation is easy, requiring no special technique. Made in sizes and tapers for all mills.

8'0" Stevenson Roller Bearing type mill with McDanel Mill Head Assembly and combination grinding and discharge door made by The Stevenson Company, Wellsville, Ohio for one of the world's largest manufacturers of major appliances.

**McDANEL**  
*Industrial*  
**PORCELAINS**



**McDANEL REFRACTORY PORCELAIN CO.**  
BEAVER FALLS, PENNA.

# What's News for you from Pemco...

## The REAL REASON users of Neowite Series 500 Frits are so satisfied with results

The reason is simple—it's typical of practically all Pemco success stories.

NEOWITE 500 SERIES FRITS were developed to meet the wants of those in the industry who were going to use them. They dictated the characteristics required and Pemco's outstanding combination of men, knowledge and equipment developed the frits and Pemco's field staff evaluated production runs.

No wonder that . . . when used with COMPATIBLE PEMCO COLORING OXIDES . . . NEOWITE 500 SERIES FRITS produce a finish that meets the highest possible standards.

**MAKE IT A HABIT TO HAVE PEMCO  
WORK FOR YOU**



**PEMCO**

**PEMCO CORPORATION, Baltimore 24, Md.**  
 "The World's Finest" PORCELAIN SPANEL FRITS • COLORING OXIDES  
 • SCREENING PASTES • GLAZE FRITS • BODY AND GLAZE STAINS •  
 • MORTARS & OVERGLAZE FRAMES • VITREOUS GLASS COLORES



## DORMEYER TO CONSTRUCT CHICAGO APPLIANCE CENTER

Dormeyer Corporation has announced that it will construct a \$5,000,000 appliance manufacturing center in Chicago, with construction starting next spring.

The development will consist of about 18 buildings, and also will house the affiliated supply firms of the company.

## HORNBACK TO HEAD ROPER SPECIAL PRODUCTS DIVISION

Ralph F. Hornbach, director of purchasing for Geo. D. Roper Corp.,



Rockford, Ill., has been named general manager of the newly-created special products division. The announcement was made by Stanley H. Hobson, president of Roper.

The division, under Hornbach's direction, will concentrate on the

dement of the company's new, long-range program of diversification. The plant will be available for the continuous manufacture of selected new products for other manufacturers. This division will seek to utilize excess productive capacities in the plant, particularly in the enamel, press and foundry departments.

## THOR WILL DOUBLE OUTPUT TO MEET ORDERS

Thor Corp., Chicago, will double production to meet orders resulting from the introduction of new automatic washing machine models, announced Thomas R. Chadwick, general sales manager. He said the company's entire factory production has been oversold for the first time in 12 months.

## ACME STEEL ENTERS KITCHEN CABINET FIELD WITH HOWELL PURCHASE

Acme Steel Company, Chicago, has acquired the assets of The Howell Company, St. Charles, Ill., manufacturers of steel kitchen cabinets.

A joint statement issued by F. M. Gillies, president of Acme Steel, and E. E. Ekvall, president of Howell, stated that the purchase was consummated as of August 31, 1954, and effective thereafter The Howell Company will be operated as a division of Acme Steel.

Geneva Modern Kitchens, Inc., Geneva, Ill.; Elgin Kitchens, Inc., Elgin, Ill.; and The Stanley Corp., Stanley, Wisc., wholly owned subsidiaries of

Howell, were also acquired by Acme Steel and will be operated as divisions of Acme Steel Company.

Present active officers of all the acquired organizations will continue in the management of the various divisions under the leadership of E. E. Ekvall, president.

## NORGE NAMES RICE MANUFACTURING VICE PRES.

The appointment of Virgil C. Rice as vice president of manufacturing,



Norge Division of Borg-Warner Corp., Chicago, has been announced by Judson S. Sayre, president.

Rice, who will be in charge of manufacturing, engineering and research, replaces Stewart S. Battles, formerly director of manufacturing, who has resigned.

## SCHOONOVER TO HEAD NBS MINERAL PRODUCTS DIVISION

Dr. Irl C. Schoonover has been appointed chief of the Mineral Products Division of the National Bureau of Standards, according to an announcement by Dr. Allen V. Astin, bureau director. Dr. Schoonover, formerly assistant chief of the Organic and Fibrous Materials Division and chief of the Polymer Structure Section, succeeds Dr. Herbert Insley who retired in January.

At the same time, the Bureau appointed William D. Appel assistant chief of the Organic and Fibrous Materials Division, and Dr. Norman Bekkendahl chief of the Polymer Structure Section to succeed Dr.



This slogan adopted in 1910 when PEERLESS was founded is in all truth a fact. Pleasing customers in any field is important, particularly so in the wire goods field. This is the reason that through the years PEERLESS has been privileged to retain the friendship and business of its customers.

There is good reason why PEERLESS products please. PEERLESS products are *quality products*. From raw material to finished work, quality and quality alone reflect the care and craftsmanship upon which PEERLESS rests its reputation in the industry.

When your plans call for wire formed products, remember PEERLESS can do it faster, better, at less cost. *Send your specifications and prints for a quotation by return mail.*

**Peerless** WIRE GOODS COMPANY, INC.  
2703 PERRY STREET  
LAFAYETTE, INDIANA

Schoonover. Appel is chief of the Textiles Section and Dr. Bekkedahl has served for many years as a chemist in the Rubber Section. Both are part of the Organic and Fibrous Materials Division.

#### WHIRLPOOL TO PRODUCE AUTOMATIC WASHERS AT CLYDE PLANT

Whirlpool Corp. will begin production of automatic washing machines at its Clyde (Ohio) plant about October 1, supplementing similar existing production at St. Joseph, it was announced by Elisha Gray, president.

The new schedule, necessitated by increased sales of both automatic washers and dryers, also calls for expanded production of automatic gas and electric dryers at St. Joseph. Present dryer production is already at the highest level since inception of the first dryer line in 1949.

#### WESTINGHOUSE DEDICATES NEW 45 MILLION-DOLLAR APPLIANCE PLANT

Formal dedication ceremonies for the 45 million dollar Westinghouse Appliance Division plant, Columbus, Ohio, were held on September 16.

A one-story type factory containing over two million square feet of working area, the new appliance plant will eventually employ between six and seven thousand people, and will be used entirely for the production of major appliances—having a production of approximately 4,000 a day. (See series of articles in May, June and July 1954 finish on the new Westinghouse plant.)

#### HEATING SHORT COURSE SPOTLIGHTS LIQUID COOLING SYSTEMS

At the 8th annual Short Course on Hot Water and Steam Heating Systems and Summer Cooling, held at the University of Illinois, Urbana, July 27-30, hot water and steam heating contractors and representatives of manufacturers and wholesalers were shown how to increase profits and improve their competitive position by using cost-cutting design and installation techniques.

This was the first time that complete methods of sizing and designing summer cooling systems using chilled water were presented in a heating short course at the University.

#### BLUEPRINT FOR PROGRESS THEME OF AUTOMATIC VENDING SHOW

The complete four-day Convention program, to be held in Washington, D. C., October 10-13 by the National Automatic Merchandising Association, has been announced by general program chairman Frank J. Bradley of Automatic Equipment Corp., Buffalo, N. Y., and business program chairman Meyer Gelfand of The G. B. Macke Corp., Washington, D. C.

Bearing the theme, "Blueprint for Progress", the 1954 show will include the largest exhibit of new vending

OCTOBER • 1954 finish

machines and vendable products in the 18-year history of the Association. The entire 70,000 square feet of floor space of the National Guard Armory will be utilized by the Convention-Exhibit.

## HEATING, VENTILATING SOCIETY

### APPOINTS KAISER DIRECTOR OF RESEARCH

L. N. Hunter, president of The American Society of Heating and Ventilating Engineers, New York, has announced the appointment of Elmer R. Kaiser as director of research with headquarters at the ASHVE Research Laboratory, Cleveland, Ohio.

During the past 20 years, Kaiser has been actively engaged in research work particularly in the field of fuels. He served on the staff of Battelle Memorial Institute, Columbus, Ohio, and with the Bituminous Coal Research as assistant to the president, assistant director of research, general manager of B.C.R. Products, Inc., and as associate director of research in charge of the B.C.R. Laboratory in Columbus.

## JORDON REPORTS REFRIGERATION SALES UP 25%

Since it began production in its new \$1,000,000 plant in northeast Philadelphia in May, Jordon Refrigerator Co. has enjoyed such an increase in demand that it is actually taxing its present facilities.

Harry Fogel, executive vice president, stated that sales of its "Duplex" combination freezer-refrigerator and its expanded commercial line of refrigerators and freezers are up 25% over last year.

## PLASTICS SOCIETY TO SPONSOR

### WEST COAST INDUSTRIAL CONFERENCE

The Society of Plastics Engineers, Inc., Southern California Section, will sponsor an industrial conference coincident with the first American Society of Tool Engineers' Western Industrial Exposition and that society's national convention in Shrine Auditorium and Exposition Hall in San Francisco, next March.

## WESTINGHOUSE-BURLINGTON MILLS

### INTRODUCE LAUNDERING MOVIE

"Your Washable Wardrobe"—a technicolor movie planned and produced to make laundering of new modern fabrics easier for the American homemaker—is being introduced jointly by the Westinghouse Electric Corp. and Burlington Mills.

Covered in the film are such important points as how to select the correct fabric—and explanation of the characteristics of the various fabrics, testing methods used to pre-test fabrics before they are put on the market, and a discussion of the importance of a gentle washing action for laundering the synthetic fabrics.

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**More Efficiency — More Sales**

**Appeal—With DRAKE Assemblies**

DRAKE Signal and Jewel Light Assemblies will serve you better . . . and often at lower cost. Expert design, patented features, top performance have made DRAKE units the choice of leading manufacturers in many fields.

LET

**DRAKE**

**QUOTE ON YOUR NEEDS!**

**ALL KINDS OF STYLES, SIZES, COMBINATIONS..**

. . . are already available in the DRAKE line. It's usually easy to select from them the exact unit to fit your requirement best. But should your application need a special design, DRAKE can develop a unit, especially for you . . . just as we have done countless times for our customers during more than 20 years of specialization.



★  
**SEND FOR  
COMPLETE  
CATALOG F**

**DRAKE**  
**MANUFACTURING COMPANY**  
1711 WEST HUBBARD ST. • CHICAGO 22, ILL.  
**SOCKET & JEWEL LIGHT ASSEMBLIES**



### NORGE NAMES CONNELL V. P.

R. C. Connell, director of sales, has been elected vice president of sales for the Norge Division of Borg-Warner Corp., Chicago.

### BOLDT TO DESIGN

#### CROSELEY, BENDIX APPLIANCES

Mel Boldt, head of Mel Boldt Co., Chicago, has been named to design



all Crosley and Bendix home appliances, it was announced by Parker H. Ericksen, Avco Mfg. Corp. vice president and appliance general man-

ager of Crosley and Bendix divisions.

Boldt, who joined the Bendix staff in 1943, designed the Bendix all-in-one washer-dryer.

### NORGE INTRODUCES

#### BUDGET-PRICED DRYER

Norge Division of Borg-Warner Corp., Effingham, Ill., has introduced a new budget-priced, fully automatic electric clothes dryer that will retail for \$149.95. It is full size and will perform on a 110-115 volt current as well as a 220 volt line.

### REFRIGERATION TRADE SHOW

#### CHANGES NAME

The official name of the trade show formerly known as the All-Industry Refrigeration and Air Conditioning Exposition has been changed to the Exposition of the Air-Conditioning and Refrigeration Industry, announced George E. Mills, show director of the Air-Conditioning and Refrigeration Institute, Washington, D. C.

The next trade show sponsored by the ARI will be held in Atlantic City, November 28 through December 1, 1955.

### ADMIRAL NAMES FREMONT

#### APPLIANCE SALES MANAGER

W. C. Johnson, vice president sales, has announced the expansion of Admiral Corp.'s appliance sales dept.



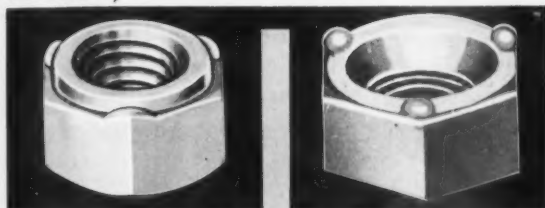
T. Stanton Fremont, formerly appliance manager for distribution branches, has been appointed to the newly created post of appliance sales manager.

Joseph P. Halpin, formerly contract division sales manager, will replace Bert Schaefer, who is on an extended leave of absence as sales manager of the refrigeration division.

**Air-Conditioning Institute board meeting**—was held August 9-11 at the Seaview Country Club, Absecon, N.J. In attendance were the following: Front row (left to right) — L. C. McKesson, Ansul Chemical; M. M. Lawler, Worthington; James Emmett Jr., Jas. P. Marsh; Geo. S. Jones, ARI managing director; A. J. DeFino, ARI president, Fedders-Quigan; L. W. Larsen, Tecumseh Products; and M. G. Munce, York. Second row — R. H. Israel, Virginia Smelting; H. F. Hildreth, Westinghouse; E. B. Dunphy, Acme Industries; G. K. Iwashita, General Electric; and A. O. Vogel, Vilter Mfg.; Third row — K. B. Thorndike, Detroit Controls; W. A. Grant, Carrier; C. V. Gary, Henry Valve; Geo. E. Mills, ARI show and public relations director; and H. F. Spoehrer, Sporlan Valve; Back row — Henry Strong, RISAC executive secretary; John E. Dube, Alco Valve; John H. Pratt, ARI legal counsel; F. G. Coggin, Detroit Controls; and W. H. Aubrey, Frick.



**WHEN YOU NEED** a nut for blind assemblies or extra threaded depth, use one of these 2 WELD NUTS



**Gripco Pilot-Projection Weld Nut**

Circular pilot designed for quick, easy positioning of nut over bolt hole for instant resistant welding. No jigs, no fumbling, no waste of time. Furnished with or without famous Gripco locking feature.

**Gripco Countersunk Weld Nut**

Eliminate time-wasting retapping of nuts after welding. Exclusive countersunk nut bottom does away with fouling of nut threads by weld spatter. Available with or without Gripco locking feature.

Gripco weld nuts are proud members of the Gripco Lock Nut family that has for 50 years provided positive holding action for quicker fastening application at less cost. Also included in the Gripco line: Gripco Lock Nuts, New Gripco "Clinch" Nuts, Gripco Hi-Nuts in all standard sizes. For any fastening problem, look to Gripco first. Write for samples and full details.

**GRIP NUT COMPANY**

"after 50 years still holding strong"

308-Q S. MICHIGAN AVE., CHICAGO 4, ILL.

## ★ A Gear Motor for SMALL APPLICATIONS



Our line of small induction motors is designed for applications where small power can be converted to considerable torque at slow output shaft speed. Hundreds of thousands are in use today for operating relays, vending, amusement, coin operated machines, motion displays, combination rotisserie and broilers, etc.

These motors are made in three basic sizes—speeds from 1 to 200 r.p.m. with proportional torque from 5 to 500 in. ounces. Write today for descriptive information, prices and data sheet.

**MOTORESEARCH COMPANY**  
1600 JUNCTION AVENUE  
RACINE, WISCONSIN

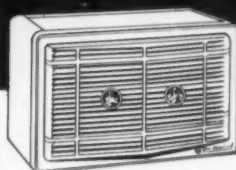
Designers and Manufacturers of

**SPECIAL INDUCTION MOTORS**

★



**RCA**  
*chooses...*



RCA chooses a nameplate that's proof of strength of product, quality workmanship and pride of ownership.

RCA's nameplate blazons a guarantee symbolic as the coat of arms on the escutcheons of the ages.

For a nameplate by **AE** heralds strength of design and construction. Its sturdy, gleaming metal proclaims serviceable qualities and character. *It is strong . . . a fitting index of the company it represents.*

The mellow patina on an **AE** nameplate in service gracefully depicts a strong product maturing in honorable, lasting use. A NAMEPLATE by **AE** means a nameplate *built* by one of the most respected names in the nameplate business. Why not see what an **AE** nameplate does for your product? *Find out today.*

**AMERICAN AE EMBLEM CO.**  
1400 Joyce St. Utica 1, N. Y.

## ROOM COOLER SHIPMENTS

### UP 35.9% IN FIRST HALF

An increase of 35.9% in the shipments of room air conditioners by manufacturers during the first 6 months of 1953 has been announced by George S. Jones, Jr., managing director of Air-Condition and Refrigeration Institute, Washington, D. C.

Over a million units (about 1,063,000) were shipped by manufacturers

during the first six months of 1954, compared with 782,066 units shipped during the same period of 1953.

## LEONARD CORDA JOINS

### DANA CHASE PUBLICATIONS

Dana Chase Publications is pleased to announce that Leonard F. Corda has joined the organization as circulation manager for *finish*.

Previously, Mr. Corda was associated with B. F. Goodrich Co. (re-

tail division), The Elkay Mfg. Co., producers of stainless steel sinks, and The Chicago Pump Co., manufacturers of electric pumps.

## BROOKS MCCORMICK HEADS

### HARVESTER MANUFACTURING

Brooks McCormick, for the past two years head of International Har-



vester Co. of Great Britain Ltd., has returned to the United States, and has been named director of manufacturing for the parent company, it was announced by John L. McCaffrey, International Harvester president.

McCormick is the son of the late Chauncey McCormick, and a grandson of William McCormick. He is also a grandson of Charles Deering, who became first chairman of the board of International Harvester in 1904.

## WORDEN HEADS PRODUCT

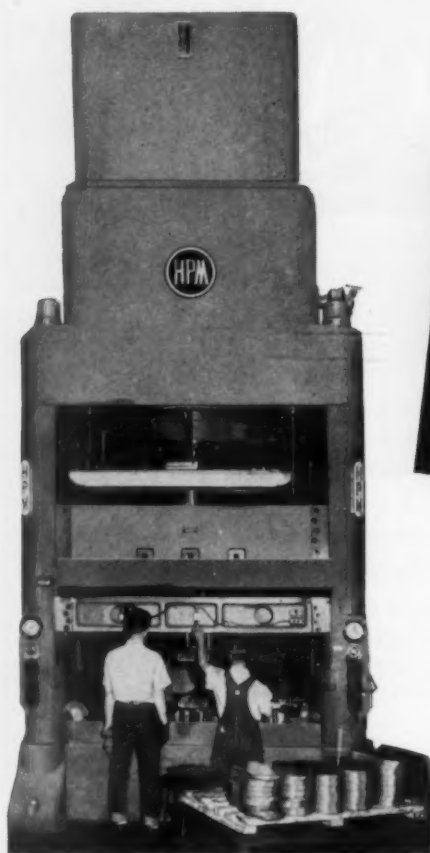
### PLANNING FOR KELVINATOR

Appointment of F. J. Worden to the new post of manager of product planning of the Kelvinator Division of American Motors Corp., Detroit, was announced by D. A. Packard, Kelvinator general sales manager.

## MUNCE TO FILL TERM

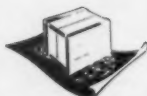
### ON ARI BOARD

Marshall G. Munce, vice president, York Corp., has been elected to fill the unexpired 3-year term of J. R. Hertzler on the board of directors of the Air-Conditioning and Refrigeration Institute, it has been announced



LIGHT or HEAVY  
LARGE or SMALL  
DEEP or SHALLOW  
SIMPLE or COMPLEX

*The Quality  
Never Varies*



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**NEW MONARCH MACHINE & STAMPING COMPANY**

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by George S. Jones, Jr., ARI managing director.

Munce will represent the Year-Round Residential Air-Conditioning Section of ARI on the board. He is also chairman of the By-Laws Committee.

## Evaporative coolers

→ from Page 31

form pattern and at uniform pressure by returning the unused fluid to paint supply. An amount of paint is delivered to the work sufficient to achieve a final dry film thickness of 0.75 mil, the minimum desirable when no primer is used.

Painted panels and parts air-dry for six minutes before entering the direct gas-fired oven. Parts enter at one side of the 12-foot wide oven, travel 60 feet, make a U-turn, and return 60 feet to the exit. The coated parts are baked at 300-325°F. in a nine-minute cycle. The baked finish is inspected as it leaves the oven and again as it is unloaded for delivery by truck to the production assembly line, some 10 to 20 feet away.

### Final assembly

Final assembly of the coolers is on an endless belt line feeding into the packaging area. Final testing of the electrical and mechanical units also takes place during assembly. Since we adopted the new finishing system, downtime on the assembly line has been reduced because of the almost complete absence of rejects.

### Characteristics of coating

The current coating contains a reactive amine, that promotes room temperature cure of the paint. This amine, packaged separately, is added to the resin vehicle just before using. The "pot life" of this formulation is about 8 hours and is limited to some extent by the nearness of the spray booths to the baking ovens.

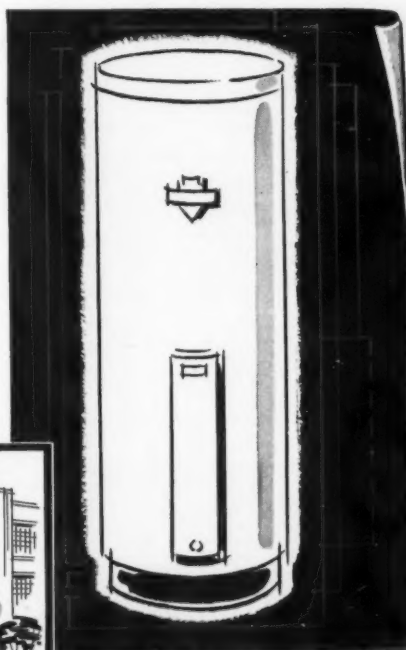
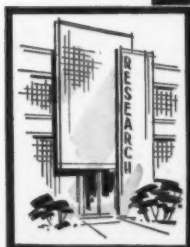
"Pot life", however, can be extended to as long as 60 hours, depending upon the formulation and the amine used. The amine in a coating of this type, which is to be force-dried by baking, is generally diethylene tramine. Various solvents are available for spraying application.

Although we are using a metallic tan color on this year's models, the essentially colorless vehicle can be formulated in a wide variety of colors. Our experience has shown it has excellent adhesion to the metal we are using, very good flexibility and water resistance, and high resistance to chemicals and solvents.

At the present time, we are manufacturing 14 models of evaporative coolers, in the "Alaskan" and "Chill-Air" types, for domestic, institutional

and industrial use. Capacities run from 1,400 cfm to 15,000 cfm of cooled air, although our big sellers are in the 1,400 to 4,000 cfm group. Because of variable factors, such as four speeds, 8-way air combination and 4-way grill, not to mention the constant presence of water, it can be seen that the corrosion resistance offered by our present finishing system is absolutely essential to keep the coolers in operation and to maintain customer satisfaction.

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do they receive? What can Fiberglas do for your products? You can see for yourself in the new Owens-Corning booklet, "Sales Opportunities," which outlines ways in which appliances and equipment of all types can be improved through new or better control of heat, cold and sound. You can obtain your copy of this worthwhile booklet through the nearest Fiberglas office, or by writing direct to: Owens-Corning Fiberglas Corporation, Dept. 109-J, Toledo 1, Ohio.



\*Fiberglas is the trade-mark (Reg. U.S. Pat. Off.) of Owens-Corning Fiberglas Corporation for products made of or with fibers of glass.

## Recent trends in coatings formulation

(Continued from Page 66)

in-emulsion types, especially in architectural finishes; however, this formulation experience can overflow readily into production finishes for non-metals. In this last direction, new resins of the polyvinylacetate type are also competitive. Both the acrylic and polyvinylacetate types of resin systems are distinguished for their adhesion properties, good application characteristics, and a durability that is adequate for many uses. Some laboratory data suggest the applicability of emulsion paints of air drying types even for metals, providing that a solvent-lacquer type of primer (such as polyvinylbutyral) is used as a corrosion inhibiting undercoat.

Latex finishes of mixed resin types are becoming important in providing decorative production coatings for molded rubber goods and fibreboard products. The highly chlorinated polymers are sometimes favored because of their greater flame retardance — for example, in coatings for

acoustical board. If the trend of the past year continues, it is conceivable that a very large proportion of the latex paint manufactured in this country will be used on production lines as well as in maintenance and architectural finishes. The lesser fire hazard that results from elimination of flammable solvents, together with their ease of application tends to favor use of such paints in coating of non-metallic production items, where decorative properties and fire retardance are more important than is corrosion protection.

Where corrosion protection of metals is more paramount than decoration, formulators continue to rediscover the old stand-by of neoprene finishes. Improved formulations are available than can be either air-dried or baked, and which allow the build-up of films of 1/8-inch thickness or more at a reasonable cost. Where a high degree of chemical resistance, flexibility and abrasion resistance are

required, the neoprene finishes have relatively few competitors. Particularly as mastics, such coatings can be formulated to have considerable fire retardance or heat insulation properties. Hence, they can protect steel from corrosion as well as strength loss due to heat in the event of fire. Decorative properties, however, are very inadequate, and these are strictly utility finishes for parts of apparatus that will see severe exposure conditions.

### Summary

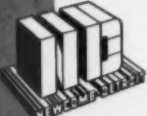
Progress of the last two years has succeeded largely in:

1. Improving considerably some, though not all, of the protective properties of decorative finishes without degrading decorative properties.
2. Providing new finishes, particularly for non-metals, that are primarily decorative.
3. Further improvement of protective properties of anti-corrosive finishes without substantial improvement in decorative properties.

If we consider neoprene mastic

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coatings as an extreme example to illustrate maximum protection without beauty, and compare it with our best alkyd-epoxy-melamine system, as a standard for the best compromise between decorative properties and protection, then the gap between the two is still very wide. Our best protective coatings are ugly, and our best appliance finishes fall far short of neoprene or baked phenolic-epoxy types in protection. Reasonably we can ask, is there any promise on the horizon that this gap will be bridged so as to get the ideal protective and decorative coating in one package? Barring the invention of some yet unknown resin system, it seems that the hope for this is very slight in terms of organic coatings.

#### The future

Because organic coatings have hitherto been less costly and more convenient to use, we have relied on them so heavily that we tend to forget that other possibilities exist for the protection and decoration of metal. Certainly, as we strive for perfection in one package with organic coatings, then organic coatings become less and less convenient to formulate, to manufacture and to apply, and certainly they become more costly.

In many instances, organic coatings are beginning to feel the competition of research in inorganic chemistry which in recent years has been awakened to a degree that can be compared with the status of organic chemistry in the 1930's. This rebirth of the much neglected science of inorganic chemistry has been stimulated by research on the jet engine and atomic energy. These influences can be compared with the effect that the need for synthetic rubber had in stimulating development of polymer and plastics industry about 10-15 years ago. This new research emphasis on inorganic chemistry will affect the ceramics and glass industry just as research on organic plastics had its effect on the paint industry. Even at this early date, the ceramic industry is becoming aware of its impending revolution and is flexing its muscles for competition with organic coatings in providing economic and

superior protective and decorative coatings for metal.

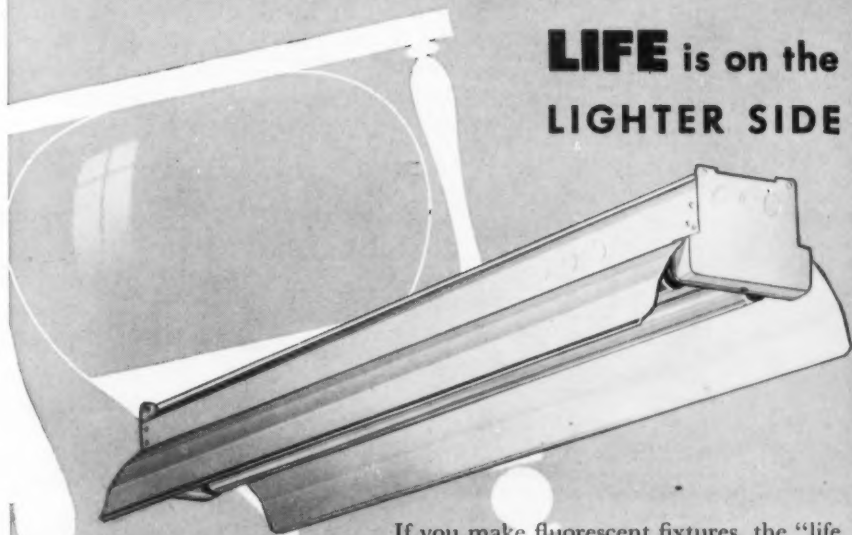
The importance of this competition may be apparent within a few years. It is quite plausible to expect that eventually very many of the serious problems of metal finishing may be solved by better ceramics instead of with organic coatings. Organic coatings will undoubtedly remain supreme in the coating of most non-metals. However, for metals and refractory materials, it is quite possible that organic and inorganic

coatings will exist side by side, the relative position of each being determined by the specifications and economics of decoration and protection. In between, with materials like titanium esters and some silicones, we have a situation where coating materials may be partly organic during manufacture and application of paint, and which become more completely inorganic during film formation. This trend, barely a shadow of promise now, may have eventually an importance we cannot even guess at today.

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## Pressed Metal Institute annual meeting

elect officers, present merit and safety awards

AT THE annual meeting of the Pressed Metal Institute, held September 4-12, at Manoir Richelieu, Murray Bay, Canada, Sam Morrison, president of Morrison Steel Products, Inc., Buffalo, N.Y., was elected president. He succeeds Samuel P. Hull, vice president of Worcester Stamped Metal Co., Worcester, Mass.

New vice presidents of PMI are J. J. Boehm, of Boehm Pressed Steel Co., Cleveland, Ohio, and C. Glenwood Rose, of Judson & Rose, Philadelphia, Pa. W. B. Gemmill, of Amer-

ican Stamping Co., Cleveland, Ohio, was elected secretary-treasurer.

Merit certificates were presented to Samuel P. Hull, immediate past president of PMI, and to Hunter Morrison, Jr., who had been secretary-treasurer of PMI for the past four years.

Safety awards went to the following firms: American Metalcraft Co., Waterville, Ohio; The Budd Company, Philadelphia; Griffith-Hope Co., Milwaukee; Johnson-Clafin Corp., Marlboro, Mass.; Kickhaefer Mfg. Co., Milwaukee; Kolk Mfg. Co., Buf-



SAM MORRISON, PMI PRESIDENT

falo, N.Y.; The Stanley Works, New Britain, Conn.; Sylvania Electric Products, Inc., Wheeling, W.Va.; Transue & Williams Steel Forging Corp., Alliance, Ohio; and Worcester Pressed Steel Co., Worcester, Mass.

The Presteel award, a new feature, went to Delman S. Harder, of Ford Motor Company.

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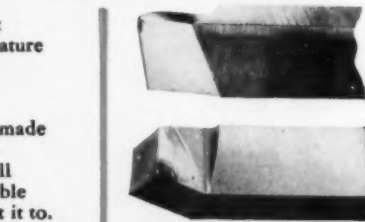
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NAME.....  
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### KORRELL TO INDIANA FIRM

P. H. Korrell, formerly with Sor-eng Products Corp., has been named executive vice president of Appliance Mfg. Co., Inc., Van Buren, Indiana.

### FLORENCE STOVE NAMES

#### KEY GARDNER PLANT MEN

Florence Stove Co. has announced the appointments of Krell Bosler as works manager and Allen C. Shippee as assistant works manager of their Gardner, Mass., plant.

### FERRO REPORTS SALES RISE

#### IN FIRST SIX MONTHS

Robert Weaver, chairman, Ferro Corporation, Cleveland, Ohio, has announced that Ferro's consolidated sales for the first six months of 1954 totalled \$19,914,826 as opposed to \$19,450,517 for the same period last year.

Weaver also noted that the total number of outstanding shares had risen from 589,027 to 600,807 as a result of a 2% stock dividend paid on June 25. He also announced that a second 2% dividend was scheduled for payment on September 24.

OCTOBER • 1954 finish

## NEWS ABOUT SUPPLIERS



PAUL LUX



C. M. SCHLEY



G. E. MONTGOMERY



P. W. MOEHLE

### INDIANA STEEL PRODUCTS HOLDS OPEN HOUSE

Indiana Steel Products, Valparaiso, Indiana, manufacturer of permanent magnets, has proved that families of its employees are interested in their "breadwinner's" work and the company which employs him.

A crowd of more than 1,140 persons accepted the company's invitation to a "family day open house" at the plant, August 18, it was reported by Robert F. Smith, president. Indiana Steel has approximately 500 employees.

### MONTGOMERY TO MICHIGAN FOR BURDETT MFG.

G. E. Montgomery is new Michigan district engineer for Burdett Mfg. Co., Chicago, manufacturers of industrial gas-fired ovens and finishing equipment. He takes the place of C. E. Fitzgerald who was recently promoted to general sales manager. Montgomery will headquarter with

Roy E. Snypp Co., Detroit, Burdett sales representative.

### PAUL LUX NAMED ASST. TO LUX CLOCK PRESIDENT

Fred Lux, president, Lux Clock Mfg. Co., Waterbury, Conn., has announced the appointment of Paul Lux as assistant to the president. He assumes his duties following two years as sales manager of the industrial division.

### SET SCREW NAMES CLARK

Set Screw & Manufacturing Co., Bartlett, Ill., has announced the appointment of Earl J. Clark as general sales manager.

### ARMED FORCES CHEMICAL ASSN. NAMES HUTT V. P.

Glenn A. Hutt, vice president, Ferro Corp., Cleveland, Ohio, has been named a vice president of the Armed Forces Chemical Association. The

new appointment was confirmed recently in Washington at the annual meeting of the AFCA.

According to the announcement, Hutt will head the War Mobilization Section of the organization, and will also serve as chairman of the 1955 Convention Committee for the Armed Forces Chemical Association, which will hold its annual meeting in Cleveland, Ohio, in June, 1955.

### DETREX NAMES MOEHLE WEST CENTRAL MANAGER

Paul W. Moehle has been appointed west central region manager for Detrex Corp., announced W. F. Newbery, director of sales. For the past three years, Moehle served as national accounts manager, and will continue in that capacity in addition to his new duties.

### SCHLEY TO PENNSALT SOUTHERN TERRITORY

Cooper M. Schley has joined the sales staff of Pennsylvania Salt Mfg. Co., and will represent the firm's metal processing and maintenance chemicals departments in the southern territory. He will headquarter in Birmingham, Ala. He had been associated with the Tennessee Coal & Iron Division of U. S. Steel Corp.

### HOMMEL FELLOWSHIP AT MELLON INSTITUTE COMPLETES 20TH YEAR

A ceramic chemicals fellowship under the donorship of The O. Hom-

**Verson Allsteel Press—** has announced the breaking of ground for a \$1,500,000 addition to the company's facilities in Chicago. On completion, it will bring Verson facilities to a point where they are six times as great as eight years ago, reported David C. Verson, president. The new building, 90 x 540 feet, will house the fabricating division, with extensive facilities for producing weldments for stamping presses and other heavy machinery. The plant is expected to be in operation by January.



mel Company has just completed its 20th year. It is referred to in a recent publication, "Scientific Researches of Mellon Institute," by Dr. E. R. Weidlein, Institute president. The report indicates that much of the current research is devoted to white cover coat enamels opacified with titanium dioxide.

#### DAFOE, MILLER TO HEAD NEW ACME STEEL DIVISION

G. Findley Griffiths, vice president-sales, Acme Steel Co., Chicago, announced that P. L. Dafoe, on leave as vice president and general sales manager of Acme Steel Products Division, will head the firm's new Dexion Division which will market slotted angle steel framing material.

Lewis R. Miller, formerly with the Ingersoll Products Division of Borg-Warner, was named assistant manager of the Dexion Division.

#### FERRO TO MAKE FLAKE FRIT IN LOS ANGELES PLANT

W. N. Noble, vice president, porce-

lain enamel frit and glaze division, Ferro Corp., said the company will install two continuous smelters for the production of flake frit and glaze in their Los Angeles plant.

#### REPUBLIC STEEL TO BUY FOLLANSBEE STEEL PLANT

Republic Steel Corp. has announced an agreement to purchase the equipment and inventory of Follansbee Steel Corp. plant in Follansbee, W. Va.

#### Freezer assembly at Amana

→ from Page 37

duced to maintain a specified pressure, the effectiveness of the sealing is indicated.

The entire freezer is cleaned, and the lower door which covers the refrigeration unit is attached. The plastic dividers for the Stor-Mor door, in which frozen food packages can be stored one on top of the other, are packed inside this lower door.

Now the freezer is ready to move on to the final testing department. Every freezer is run for 90 minutes, during which time a recording thermometer, connected to the shelves and different points inside the unit, gives a complete picture of the freezer's operation. Cycling of the refrigeration system is checked, temperatures at different points must conform to rigid, sub-zero standards, and the thermometer in the door is verified.

Finally, a second leak-test on the over-all cabinet, and condensing unit joints, is performed. This is a final inspection for any leaks or refrigerant that may have seeped into the insulation. Any minute trace of refrigerant causes the entire freezer to be rejected and returned for adjustment of the fault. To eliminate any moisture or odor that may have been picked up in the assembly or inspection process, each unit is dried for 30 minutes.

At the end of the assembly line, located in the end of the plant adjacent to the loading docks, the freezer is ready to be packaged for shipment.

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